

NC COASTAL RESOURCES COMMISSION (CRC)

February 17, 2010

**New Hanover County Government Complex
Wilmington, N.C.**

Present CRC Members

Bob Emory, Chairman
Joan Weld, Vice-Chair

James Leutze
Chuck Bissette
Charles Elam
David Webster
Veronica Carter

Ed Mitchell
Bob Wilson (present at 10:15 a.m.)
Lee Wynns
Benjamin Simmons

Present CRAC Members

Dara Royal, Chair
Frank Rush, Vice-Chair

Webb Fuller
Joseph Beck
Bob Shupe
Bill Morrison
Michael Moore
Tracy Skrabal
Missy Baskerville
Debbie Smith
Wayne Howell
Rhett White
Bill Gardner, Jr.

Eddy Davis
Lee Padrick
Tim Tabak
Charles Jones
Judy Hills
Anne Deaton
Debbie Smith
Phil Harris
William Wescott
Cyndi Karoly
Harry Simmons

Present Attorney General's Office Members

Jennie Hauser
Christine Goebel

CALL TO ORDER/ROLL CALL

Chairman Emory called the meeting to order and reminded Commissioners of the need to state any conflicts due to Executive Order Number One and also the State Government Ethics Act.

Angela Willis called the roll. Renee Cahoon, Jerry Old, Bill Peele, and Melvin Shepard were absent. There were no conflicts or appearances of conflict stated by Commissioners. Based upon this roll call, Chairman Emory declared a quorum.

MINUTES

Jim Leutze made a motion to approve the minutes of the January 2010 Coastal Resources Commission meeting. Ed Mitchell seconded the motion. The motion passed unanimously (Weld, Leutze, Bissette, Elam, Webster, Carter, Mitchell) (Wilson absent for vote) (Wynns, Simmons abstained).

EXECUTIVE SECRETARY'S REPORT

DCM Director Jim Gregson gave the following report.

New Commissioner

I would like to welcome the newest member of the CRC, Jamin Simmons and thank him for being able to come to the Morehead City office for orientation.

SLR Forum

I want to congratulate and thank Tancred Miller for a very successful Sea Level Rise Science Forum, which took place at the January CRC meeting. The forum attracted several national and state experts as speakers who discussed past and potential future sea level rise impacts for North Carolina. More than 250 stakeholders from the public, academic and policy institutions and state and federal agencies were in attendance. The Forum culminated with the Coastal Resources Commission's Science Panel giving its preliminary report of data on current and projected rates of sea level rise within the state. A final report from the Science Panel is expected within the next few weeks. The CRC and DENR plan to use these metrics as the foundation for education, policy development, and adaptation planning in the state.

Training Opportunity

On April 7, the Coastal Reserve's Coastal Training Program will present a free workshop in Beaufort on Controlling Microbial Pollution in Your Community. This workshop will address why microbial pollution is a threat to water quality, public health and local economies; discuss how the Coastal Stormwater Rules and stormwater structural best management practices can control microbial pollution; introduce emerging technology in detecting microbial pollution; and demonstrate through a case study how you can become actively involved in controlling microbial pollution in your community.

This event is designed for local elected and appointed officials, local government staff, and local health department staff.

Staff News

DCM's IT Manager, Josh Shepherd, will be leaving the Division at the end of February for a position with the N.C. Dept. of Agriculture. Josh has been with the Department for more than 13 years. Josh will be missed by all in the Division.

CHAIRMAN'S COMMENTS

Chairman Emory stated the Sea Level Rise Science Forum was very successful. I was impressed with the information that we were presented and would like to offer my congratulations to Tancred on a job well done in planning it. It provided us some very valuable information that we will be able to use as we move forward. One of our strategic goals on how we would spend our time was to begin to try to get our arms around what sea level rise means to the coastal area of North Carolina. Along with some rule changes that we have done, this was a big first step in trying to understand the impact of sea level rise. There has been a lot of activity associated with the study on terminal groins that the Legislature tasked the CRC with. There has been a lot of effort on the part of the Division Staff, CRAC members, CRC members, as well as the contractor and the Science Panel.

CRAC REPORT

Dara Royal welcomed Commissioner Simmons. She also welcomed Ocean Isle Beach Mayor Debbie Smith, the newest member of the CRAC. Debbie represents the Cape Fear Council of Government. The Advisory Council began discussion in October about updating the 7B land use

planning guidelines. The update was one of the priorities identified by the joint CRC-CRAC strategic planning exercise in January 2008. The Council has worked with Staff to outline the role we can play in updating the rules. We recommend the CRC appoint a joint CRC-CRAC subcommittee that can begin the work of reviewing the guidelines and preparing recommendations for consideration by the full Commission. Other specific recommendations relative to this topic are as follows: the subcommittee should be kept small and consist of three CRC members and five CRAC members; the Advisory Council nominated Dara Royal, Frank Rush, Tim Tabak, Christine Mele, and Lee Padrick to serve. We felt these folks represent a good cross section of the CRAC membership. DCM Staff should be directed to support the work of the subcommittee. The subcommittee plans on spending about one year to gather stakeholder input and prepare recommendations. The subcommittee engages the participation of NOAA OCRM as a way to smooth the process of having CRC approved land use plans incorporated into the state's federally approved coastal program. The subcommittee plans and implements a program for education for local governments about the CAMA land use planning program. These recommendations were approved unanimously for the CRC's consideration.

Charles Elam made a motion to accept the CRAC's recommendations. The motion passed unanimously (Elam, Wynns, Weld, Bisette, Carter, Leutze, Mitchell, Webster) (Simmons abstained) (Wilson absent for vote).

Chairman Emory nominated Bill Peele to the subcommittee. Ed Mitchell and Charles Elam volunteered to be on the subcommittee.

Dara stated the other item of business results from an extensive discussion about the challenges that local governments continue to face in completing some beach, inlet and waterway projects. The Town of Carolina Beach recently had to scale back the nourishment project at the last minute because of an unanticipated reduction in federal funding share. The Town had its own funds available to make up the shortfall, but was unable to use those funds because no mechanism exists in the regulatory framework to allow the Town to do this. One way to have addressed the Carolina Beach problem would have been to grant the Town a permit to complete the rest of the project as already designed and approved using the Army Corps of Engineers environmental analysis that the State has already determined to be consistent with the State's rules. The Council discussed this issue with Staff three years ago. We do not feel that it was successfully resolved. We believe that a satisfactory solution is possible with further discussion and we are assembling a small CRAC team to pursue that solution. The team will be working with DCM Staff and the Corps to explore the options and CRAC will continue this discussion in March and will have a recommendation for the Commission soon thereafter.

PRESENTATIONS

CRC Study of the Use of Terminal Groins (CRC 10-08)
Johnny Martin, and Paul Tschirky, Moffatt & Nichol

Jim Gregson stated we thought it would be prudent to give a brief history of how we got to where we are with the ban on hardened structures, what the existing rules say about erosion control structures, and talk about the existing law. Shortly after CAMA was passed, the CRC decided to limit the use of permanent erosion control structures with the exception of protecting structures that already existed. If you had a building that was there prior to June 1, 1979 it could be protected with a permanent erosion control structure such as a jetty or seawall). In 1984, the Outer Banks Task Force recommended prohibiting hardened structures unless strict criteria could be met. The criteria was lengthy and some of it is incorporated in the current rules for hardened

structures. A lot of what we have today is based on what the Outer Banks Task Force recommended. In 1985, the Commission banned hardened structures regardless of the construction date for the structure that was being protected. In 1989, the CRC amended the hardened structure ban to allow for the protection of Bonner Bridge. In 1992, there were additional amendments that gave exceptions for the protection of nationally significant and historic sites and commercial navigation channels. In 1995, the CRC granted a variance for a sand tube groin field located on Bald Head Island and that was later added to the exceptions list. In 2003, the law was amended to prohibit permanent erosion control structures with limited exceptions. The current rules say that permanent erosion control structures may cause significant adverse impact on the value and enjoyment of adjacent properties or public access to and use of the ocean beach and therefore are prohibited. Keep in mind that the list of structures in the rule includes groins and this would include terminal groins. There are some exceptions in the rules and they are not banned in all instances. The exception basically says that those structures that would otherwise be prohibited could be permitted if there are certain findings. 7H .0308(H) states that it can be permitted if the erosion control structure is necessary to protect a bridge which provides the only existing road access on a barrier island that is vital to public safety and is imminently threatened by erosion. If the structure is located within twenty feet of the erosion escarpment it is considered imminently threatened. The structure can be permitted if the structure is necessary to protect a state or federally registered historic site that is imminently threatened by shoreline erosion. The third exception is if the structure is necessary to maintain an existing commercial navigation channel of regional significance if the channel is maintained within the federally authorized limits. The fourth exception states that you may renew a permit for an erosion control structure that is issued pursuant to a variance granted by the Commission prior to July 1, 1995. The Commission may also authorize replacement of that permanent erosion control structure that was permitted pursuant to a variance granted prior to July 1, 1995. Your rules do not completely ban hardened structures. There are exceptions to that ban and that could be used today to permit structures in limited circumstances. The two structures in North Carolina that are part of the terminal groin study could be permitted today based on your rules. CAMA was amended in 2003 which codified what the CRC said in its rules. This amendment was the result of a Senate Bill that was put into place with the intent of strengthening the ban on seawalls. The law also defines what an erosion control structure is. The law says that no person shall construct a permanent erosion control structure along an ocean shoreline. It goes on to talk about what types of erosion control structures are allowed by law. Currently those types of structures are limited to temporary sandbags. The law also set up some exceptions that reference the exceptions set out in the CRC's rules. The two terminal groin structures in North Carolina are not currently banned by state law or the CRC's rules.

Paul Tschirky of Moffatt & Nichol stated this presentation will be a study overview and then discussion of the draft report. The first part of the draft report is the coastal engineering analysis and geological assessment. This is one area that the draft report will differ from the final report. Based on comments from the Science Panel and others we will restructure the report to integrate the coastal engineering and geologic analysis into one section called physical assessment of the terminal groin. The next section will be the environmental assessment portion of the report. The next part of the report is the economic assessment. The last section of the report combines the construction techniques, costs, and locations.

House Bill 709 was the driver of this report. This bill identified in its second section that the Coastal Resources Commission shall conduct a study of the feasibility and advisability of the use of a terminal groin as an erosion control device. Six specific things were identified in the legislation. The first was to gather scientific data regarding the effectiveness of the terminal groins. The second point is to look at the impact of terminal groins on the environment. The

third point was to address the engineering techniques used to construct terminal groins. The fourth point was to look at the economic impact of erosion caused by shifting inlets. The fifth point was to look at the cost of construction and maintenance. The sixth point specifically asks whether terminal groins should be limited to navigable, dredged inlet channels. Another part of the legislation was the need for public input. Three public hearings were required. We have already conducted three public hearings and two more are scheduled. All of the presentations, comments received and meeting minutes have been added to the Division of Coastal Management website www.nccoastalmanagement.net. Comments can be made to Jim Gregson in his role as Executive Secretary to the CRC. The legislation identifies that the final findings of the CRC should be reported to the Environmental Review Commission and the General Assembly by April 1, 2010. The project study team includes Moffatt & Nichol who looked at the coastal engineering and physical assessment. Dial Cordy and Associates looked at the environmental issues. Dr. Duncan FitzGerald from Boston University consulted with us on the coastal geologic aspects. Dr. Chris Dumas from UNCW led the economic portion of this study. The CRC and CRAC have been providing guidance to the study team and will ultimately develop policy recommendations to submit to the ERC and General Assembly. The Science Panel has been involved with project scoping, approval and discussion of the study methodologies, as well as in an advisory capacity on the draft report.

The first step of the study was to look at what sites would be studied. There were 23-25 sites identified originally, primarily along the southeast coast of the United States. At the September Science Panel meeting there was discussion on which sites were most appropriate to proceed forward with in the study and five were selected. Oregon Inlet and Fort Macon are in North Carolina. Amelia Island, Captiva Island, and John's Pass are all in Florida. Sections two and three of the draft report will be combined in the final report to address the coastal and geological in one physical assessment section. The first step in this section was to gather and compile the physical data. In order to assess the physical impacts of the terminal groin the first thing used in the methodology was to look at shoreline change. The objective was to gather shoreline information for periods prior to the construction of the terminal groin and after. Once the shoreline information was gathered for pre- and post- periods then the shoreline change was measured at fifty meter transects for three miles on each side of the inlet. From those measurements we calculated pre- and post-shoreline change rates along those three miles on each side of the inlet. We did that as a cumulative average as well as averages over intervals. In these shoreline changes there are also other activities that would be going on along the shoreline in addition to the terminal groin like beach nourishment and dredging. The shoreline change information was converted into a beach volume change. We wanted to get to a volume form so we could look at the potential impacts of nourishment and dredging on the shoreline behavior. Nourishment was important so we looked at all the information that was available. Volume changes were calculated pre- and post-structure netting out all nourishment. Dredging also has an impact on what sand arrives at the beach. We looked at the dredging volumes that were available and times they were dredged. In the report there are scenarios looking at the amount of dredge material. Integrated into this is the discussion of the geologic setting which included literature review for the five sites. The physical and geologic processes were discussed as they related to the terminal groin. The differences were measured between historic positions pre- and post-structure. Included in the change are sea level rise, storms, beach nourishment, dredging, structures, and long-term natural regional shoreline processes. As summary of the overall findings looking at the five sites, if you look at shoreline change you see that the shorelines on the structure side of the inlet were eroding prior to the groin construction. The shorelines on the opposite side of the inlet in the five cases we looked at don't display a clear trend. Some are eroding and some are accreting. However, due to the nourishment and dredging activities you cannot make an assessment on what the terminal groins are doing based on the shorelines alone.

The next part was the nourishment and nearshore disposal displacement volume. On the structure side of the inlet when we net out all the beach nourishment and all the nearshore disposal, the beach along the three miles on the structure side generally displays a reduction in eroded volume with the exception of Amelia Island. Part of that may be that Amelia had a very large renourishment project that went along with the construction of the structure and it is the newest structure so there is not a long time history post-construction. If you look at the report, we looked at two different time periods at Oregon Inlet. For one of the time periods Pea Island also shows some slight increase in erosion volume. Beach volume changes on the opposite side of the inlet don't show a clear trend. Dredging activity deprives the natural sand bypassing of the inlet. Sand that might have normally, naturally deposited on the beach isn't getting there anymore. We need to count that in order to have a full understanding of the relative impact of the terminal groin.

Dawn York of Dial Cordy and Associates stated Dial Cordy was charged with evaluating the environmental analysis. We collected and analyzed biological data that was readily available and scientific literature. We identified and interviewed state and federal agencies, non-profit organizations, as well as non-governmental organizations. We evaluated the available biological data using a spatial and temporal basis using pre- and post-construction. We also looked at similar sites adjacent to the study areas. We evaluated data on a graphical representation providing the information in the study report as observations per year. Based on comments and recommendations from the Science Panel we also integrated storm and renourishment data for each of the sites trying to define any trends in the data. We also described the data numerically in the report. Based on our study we realized that there were quite a few caveats. No new data was collected during the study. It was an evaluation of preexisting data. We looked at existing secondary sources and raw data collected by the other entities. We looked at available data but did realize that most of, if not all of, the information that was readily available was not directly related to the construction of a terminal groin. Beach nourishment and terminal groin effects could not be separated based on available natural resources data. The historical nature of some of the study sites, including John's Pass and Fort Macon, precluded the availability of pre-construction natural resource data that we could look at to evaluate before and after. Prior to construction and after construction data were only available for two sites, Oregon Inlet and Amelia Island, and it was only available for limited resources such as sea turtle and shorebird data. Some of the resources that were evaluated in addition to the biological resources we have listed were recreational, public access and aesthetics. Minimizing natural overwash at the end of a barrier island limits the natural processes which affect inlet habitats, thus affecting species use. We know that anchoring the end of an island may curtail an inlet's natural migration patterns thereby minimizing the formation of sand flats. The fillet material that is used at the end of an island should be compatible to minimize effects on benthic and infauna recovery and upper trophic levels. We did see through the data that was available to us in our evaluation that resources continue to use the study sites where terminal groins exist, however if habitat succession occurs species suitability may be affected. The available data and the limited time frame for the study did result in non-discernable site specific trends.

Johnny Martin of Moffatt & Nichol stated I will be talking about some of the economic work and some of the construction costs, techniques, and locations. Dr. Dumas could not be here today. There has been a lot of input from the Science Panel on this portion of the study. It was agreed that the method and approach for this portion of the study should be to identify properties and infrastructure at risk using proposed 30-year risk lines. The current property and infrastructure locations and value data were assembled. The economic value was added up and tabulated for each side of the inlet. The features from the legislation that were to be in the study included property loss, public infrastructure and tax-base losses and all of these were considered. We also

realized that there were other factors that should be included so diminished market value, impacts on second row, and environmental and recreational values were also included in the study. The summary results of the economic study show the economic impacts vary widely by inlet and side of inlet. The inlets with higher development may have significant infrastructure and property at risk over the next 30 years. All areas denoted by 30-year risk lines may not be protected by a terminal groin structure. Additional factors such as recreation, environmental economic impact, and property transfer value can be important. The literature review of techniques used to limit impacts on adjacent shorelines included limits on groin height and length, porosity of structures, materials, etc. We also did a parametric study with the available data on the five sites looking at how shoreline change rates were altered pre- and post-structure and tried to plot that against some of these different factors. Longer length has more effect. There is a threshold that you reach. Higher elevation also has more effect. The leaky groin at Amelia Island clearly allows more material to pass through it than the other structures. Groin structure shape has an influence. Some areas are using things like inclined and notched structures as well as different planform shapes to limit impact on adjacent shorelines. Material types have also been shown to affect sediment transport rates and shoreline behavior. Concrete, steel, timber sheeting and pilings allow for adjustments in the field as well as removal of the structures if shown to have an unacceptable adverse impact. You would be able to remove one hundred percent of the structure. You may only be able to remove eighty or ninety percent of a rock structure. Available cost data was reviewed for existing terminal groins including public and private costs. Ranges were developed of potential costs based on typical expected terminal groin dimensions and typical North Carolina offshore slopes. Rock would be used for some of the shorter structures and could run as low as \$1200.00 per foot, but if you start getting out into deeper water on a steep beach then it could be as high as \$6500.00 per foot. Oregon Inlet was a little bit higher than that. Steel and concrete structures did not have as much variability within them mainly because you can only go out to a certain depth before they become unfeasible. These would be suitable for shallower structures, but not in deep water. Timber and geotextile tubes are comparatively a good bit less expensive, but could not go into deep water. We found that the annual maintenance costs can vary widely as well. The ones here in North Carolina have not had a lot of maintenance done to them. Maintenance costs can be very minimal. John's Pass and Captiva Island have both required major rehabs over a twenty year time frame. We think it is mainly due to the fact that these were built with local dollars and they were not built to the 100-year design level. The annual maintenance costs would be between 5 – 10% of the initial cost of construction. As a result of sea level rise and storms over a long period of time it would increase the cost by another 5-10%. Initial beach nourishment costs should also be included. Permitting, design, monitoring and removal costs should also be included. Some of the shorter structures are estimated to be around 2.5 million dollars initially with annual maintenance costs around \$500,000.00 per year due to the required monitoring and long-term maintenance. For larger structures (around 1,500 feet long) it would be around \$10 million with about \$1 million per year maintenance costs. Literature review was done of the existing locations of the inlets. We looked at issues with respect to use at navigable, dredged inlets versus non-dredged inlets. We also looked at inlet behavior and whether the inlet was stable or migrating. The goal was to assess and comment on the locations of terminal groins with respect to the inlet conditions as well as the geologic and hydrodynamic setting of each of the five study cases. Most of the existing sites include navigable, dredged inlets. We looked at all of these structures and tried to find one that was at the end of a littoral cell and we could not find one. Only five locations were considered for the study. The five sites have similar hydrodynamic conditions as North Carolina inlets. There was a significant range of inlet management covered with the five study sites. There are two take home messages from the study. The level of interventions and manmade impacts (nourishment and dredging) along with the terminal groin dimensions determine relative scale effect of the groin. In some of these areas like Oregon Inlet or Beaufort Inlet where you do

have some intense nourishment and dredging operations, those overwhelm any of the impacts of the terminal groin itself. However, when you look at some of the ones down in Florida that are not so heavily managed, then the terminal groin impacts are a lot more apparent or the potential effects are a lot more apparent. There is a relative scale effect with these structures. Nourishment and some level of inlet management normally accompany terminal groins. Usually these things are not done in a vacuum. In all cases that we have seen there has been some level of nourishment that has gone on as well as some level of inlet management to help fix the location of the channel so it will not undermine the groin.

Bob Emory stated this task was assigned to us by the Legislature. Our task was to study the advisability and feasibility of terminal groins in North Carolina. We do have a due date of April 1, 2010 to report our findings to the Legislature. The way the legislation was written we report to the Environmental Review Commission of the Legislature. That method of reporting has not been determined at this point. We are working off of the assumption that we need to be ready April 1. The Moffatt & Nichol report is almost final. You have heard during the presentation that they have consulted and received input from the Science Panel along the way. There was discussion among the Steering Committee members early on that the Science Panel would be in a peer review role. It became obvious as things went on that there was not time to do a true peer review of this study. The Science Panel wanted to make it very clear that this report will not be considered to be peer reviewed by the Science Panel. There has been a lot of interaction, advice and input but we are not going to call this a peer reviewed report. We have had three public hearings already, have one scheduled for today, and the last one is scheduled during our next CRC meeting. We have a Steering Committee made up of CRC and CRAC members. This group has met with the consultants twice and will meet one more time before the Commission has to come to some sort of final recommendation. We have just heard a summary of the draft report. I would say that the report is informative and it covers all of the topics that the legislation called for. It includes five study sites, but we need to remember that it did not attempt to analyze all North Carolina inlets for the advisability and feasibility of the use of groins. The report does a good job of highlighting conditions at specific inlets but the report did not do our work for us. It does not send an easy, clear message for us. We are going to have to digest this report and come up with a recommendation based on the report. Our recommendations to the Legislature should include our assessment of what we learned from the Moffatt & Nichol report. Our report to the Legislature should include recommendations for action, no action or what we think should happen with terminal groins. Today I hope we can provide Staff a sense of where we are on the report and maybe begin to develop a sense of where we are on terminal groins. Any final decision on terminal groins should be based on the final report. Let the Staff begin development of the CRC document that will accompany the report to the Legislature. The Science Panel and the Steering Committee will meet in March to review the final report. Some of the possible outcomes include (1) status quo with the existing exceptions; (2) keep the ban and get rid of the exceptions; (3) retain the ban with the existing exceptions and add some new ones that should be considered; (4) recommend that the Legislature restore the former authority the CRC had to handle groin requests through a variance procedure (either with the standard variance criteria or with specific criteria for groins); (5) retain the current ban but get the authority from the Legislature to develop development guidelines and permitting procedures for terminal groins; or (6) recommend doing more study.

Bob Emory stated that he would like to get Staff started on development of a document that would come from the Coastal Resources Commission to accompany this report to the Legislature. The next time the Steering Committee meets it will look at the document that Staff has put together on our behalf and refine it. We need to look into the Moffatt & Nichol report and see to what degree of certainty we can speak to several issues. We need to consider the effect on adjacent and nearby shorelines and wildlife habitat. Make sure if a community has the

ability to put in one of these structures that the money is there to maintain and nourish through time. There are concerns about the practicality of removing a groin if you ever have the need to remove one. We know quite a bit about the five inlets in the study and about what the impact is within three miles, but we are less certain about impacts beyond three miles. Every inlet is different and unique. It would be a challenge to develop a rule, a development standard, for groins with the great variability from inlet to inlet. Lift statements of uncertainty out of the report. Let the Legislature know there is too much uncertainty to determine the feasibility or advisability. There is a lack of empirical data. We should obtain some best practices from other states and include their success and failures in the Staff's report. We need to list the resources that we are worried about, but also talk about the people. The tax payers of North Carolina are a major resource. We also need to include what makes the North Carolina coast different from other coasts.

PUBLIC COMMENT

Marty Cooke stated I am a County Commissioner in Brunswick County. I have been to other Coastal Resources Commission meetings. I have to tell you that I have come to appreciate your job because I sit on a similar perspective. As Veronica stated we have to make decisions for not just one individual, but one size has to fit all. I have walked the beaches of Ocean Isle Beach and some of these other beaches and I equate it to being a patient who is now on life support, a patient who is dealing with a bleeding ulcer, or a patient who is suffering from a condition that may ultimately cause their demise. That being said, as a layman and not having a degree in meteorology or any aspect of climate change, sea level change or anything else, just as a layman as a citizen of the State. And as a citizen of Brunswick County and having seen firsthand some of the issues that we have I think the terminal groin does provide us with a perspective where we can bring stability. I think as Dr. Leutze stated there doesn't seem to be any indication that the terminal groins don't work. Categorically if they did not work we probably wouldn't be having this discussion. But there seems to be some basis whereby it does. That being said my real concern is that if we continually have exhaustive studies at some point we won't have anything to protect. It isn't just the property owner. It isn't just that one individual. It's the infrastructure. It's the tax base. It's the cities. It's the towns. It's the inlets. It's the waterways. It's everything that we have as one package. So it is not that affluent individual, that person who is given something by their parents or whatever, it is an overall collaborative, comprehensive aspect of how we must be able to provide stability for our beaches. I implore you; please do not exhaustively study this. We need to find a way to actually address this issue, even if we do have to have some degree of maintenance, we will be able to find a more sustainable stability for these beaches than what we have at this time. Thank you for your time.

Steve Foster stated I have lived on the coast for over 30 years now. Gratefully, I have enjoyed every minute of it and hope I live here for another 30 years. The coast is under assault. It is under a terrific amount of strain and stress. I have worked on beach renourishment projects. I am currently the Town Manager at North Topsail Beach and former Manager at Topsail Beach. There is no money available for non-federal projects. These small towns are for beach renourishment. These small towns are struggling. I mean literally struggling trying to scrape up every single penny that they can get together just to save their communities. This isn't an issue of maybe we can or should we or anything else. We have to. So if we can somehow use this tool, these terminal groins, as a potential to help these communities I think it is incumbent on the Legislature and everyone to try to expedite this as soon as they possibly can. Thank you.

PUBLIC HEARING

CRC Study of the Feasibility and Advisability of the Use of Terminal Groins

Paul Tschirky of Moffatt & Nichol stated this presentation would be similar to the others given at the three previous public hearings. House Bill 709 was the trigger for this process. It had two sections in the Bill and the second section of the Bill directed the Coastal Resources Commission to study the feasibility and advisability of the use of a terminal groin as an erosion control device. The legislation specifically had six points that should be considered. The study follows those six points. The first was to look at scientific data regarding the effectiveness of terminal groins. The second was to look at the terminal groin's impact on the environment. The third was to look at engineering techniques used to construct terminal groins and if anything could be done with the techniques to minimize any impacts that they may have. The fourth point was to look at the economic impact to North Carolina from shifting inlets. The fifth point was to look at the cost of construction and maintenance of terminal groin structures. The sixth point specifically addressed the question of location and whether terminal groins should be limited to navigable and dredged inlet channels. The other parts of the legislation addressed the need for public input. Three public hearings were required in the legislation. Today is the fourth public hearing that has been held on this study and a fifth is scheduled during the next Coastal Resources Commission meeting. The final report by the CRC to the ERC and General Assembly is due April 1, 2010. The study team that put together the draft report is Moffatt & Nichol which looked at the coastal engineering and physical aspects. Dial Cordy and Associates looked at the environmental aspects. Dr. Duncan Fitzgerald of Boston University provided advice with respect to the coastal geology. Dr. Chris Dumas from UNCW worked on the economic section. The overall work plan for the contractor portion of the study had seven main tasks. The first six tasks mirror that of the legislation. The seventh task is the public input. The eighth part is the reporting function. The CRC and CRAC have provided guidance to Moffatt & Nichol during the study and are ultimately responsible for developing policy recommendations. The Science Panel was involved in the project scoping, approval of the study methodologies, and in an advisory capacity providing comments to those methodologies and to the report. The five sites that were selected to look at in detail in the study were two in North Carolina, Oregon Inlet and Fort Macon, and three in Florida, Amelia Island, Captiva Island and John's Pass. All information on this study (reports, presentations, comments, and meeting schedules) can be found on the DCM website www.nccoastalmanagement.net under the "What's New" section. Comments can be made to Jim Gregson at Jim.Gregson@ncdenr.gov in his role as the Executive Secretary to the CRC. The working draft of the report came out on February 1, 2010 and it is available on the website. The final draft of the contractor portion of the study is due March 1, 2010.

John Fisher, Village of Bald Head Island, stated I would like to start by saying that the Village of Bald Head Island appreciates the hard work that the Coastal Resources Commission, Steering Committee, Science Panel, Advisory Council, Division of Coastal Management, Staff and their consultants have put into this terminal groin report as well as Moffatt & Nichol. It is a very inclusive product. Often we don't recognize those that do a lot of public service work. You are appreciated. We may not always agree with the results of some of these things, but the effort is there and it is appreciated. This is how we reach conclusions and move forward. The report is consistent with Bald Head Island's experience and belief that terminal groins can be helpful at inlets if properly designed and constructed as part of a comprehensive management plan which does include beach nourishment. That was alluded to by the Science Panel and not necessarily all added in this report but it is certainly a key component. The Bald Head Island sand tube groin field was alluded to earlier. I want to state for the record that it has been very helpful. It is not robust enough for the serious shipping channel induced erosion that we experience on Bald Head Island, however the sand tubes also do not meet the report preferred design criteria of structure

permeability, longevity, low-elevation, wave absorption characteristics and so forth. But do they do the job? Yes they do. The Bald Head Island cloth tubes fail approximately every four to five years and that is relative to major storms or not. This costs about 1.1 million to replace each time we go back into that. You have personally observed the Corps' dredging and erosion which results immediately thereafter at Bald Head Island. You have also observed the loss of public beaches, habitat and accesses. The Village had to fund a 17 million dollar beach nourishment project this past year. That was to protect the island's habitats, homes, and infrastructure as the existing sand management plan is inadequate and leaves a four year gap between the placement of sand from the Corps. A terminal groin should be studied for Bald Head Island and maybe helpful along with continued sand placement under the sand management plan as part of a comprehensive management plan at Bald Head Island's inlet and other NC inlets. All of the inlets are unique and different. It is very difficult. We have heard that today reiterated numerous times to have a scientific study that says each is the same. As legislation is necessary to build a terminal groin, the CRC should propose legislation to the General Assembly. The legislation should require proper oversight and compliance with good engineering practices. We do feel that today's engineering practices are much better than they have been in the past. Science is science and we are moving forward. Engineering is moving ahead. The legislation should allow terminal structure permit decisions to be made by the CRC or the DCM Staff rather than being made at the legislative level. Bald Head Island will again have a four year sand gap in 2016-2017. We do need some action and quickly because the process is timely overall. Bald Head Island's beaches, turtles and birds belong to the State and the people of North Carolina. They are worthy of protection. Terminal groins that are properly designed and constructed as part of a comprehensive management plan, including beach nourishment, can be helpful at Bald Head Island's inlets as well as other N.C. inlets. The alternative to no terminal groin may be no beaches at all. I didn't hear that talked about too much in the reports. I did hear about habitat, preservation for the critters as well as the people, and the birds, fish and wildlife. But the environmental impact of allowing unmitigated erosion doesn't seem to be present in the report. That needs to be thought about. What if we do nothing and the beach continues to fall away and is gone? The Village of Bald Head Island has delivered a letter in support of terminal groins to the Coastal Resources Commission as well as the N.C. Division of Coastal Management. We would like to see our suggestions, the study of this report considered and the legislation move forward as we have heard today.

Alderman Deborah Lanci stated she represents the Citizens of the Town of North Topsail Beach, the Board of Alderman and the Mayor. I have been authorized by the aforementioned leadership to make a statement at today's CRC public hearing with regard to hardened structures in the form of terminal groins. North Topsail Beach would like to go on the record as proponents of legalization of terminal groins solely for the purpose of inlet stabilization. With the textile and furniture industries having been relocated out of North Carolina and sent overseas, tourism now remains one of our main leading industries. Towns like North Topsail Beach that are located adjacent to turbulent, dynamic inlets face severe erosion challenges. Some might see inlet stabilization as a means of protecting private properties, however in order to continue to compel tourists to continue to visit our beaches we need to demonstrate our commitment to maintaining those beaches with erosion control. It is a well known fact that wide, white sandy beaches are the preference of tourists. No tourist wants to arrive at their vacation destination to find the home that they rented is next to a condemned structure falling into the ocean. Residents of our town and towns of similar geography find themselves having to foot the bill for very expensive beach renourishment events. Inlets tend to act as enormous black holes sucking in sand from neighboring beaches and requiring very expensive navigation channel maintenance dredging operations. The ability to stabilize the inlet by means of a terminal groin would lessen the need to perform such operations as frequently. When the maintenance is required, the sand could be

placed in a means sensitive to mitigating any downstream beach erosion. In conclusion, on behalf of North Topsail Beach, I implore the CRC to make the recommendation to legalize the use of terminal groins as a means of inlet stabilization on North Carolina's beautiful yet fragile coastline. Thank you for your time and anticipated support of our concerns.

Ray Webb, attorney with Bald Head Island Limited, stated I delivered a letter of comment from our CEO and President and ask that this be made a part of the record on this matter. I was searching for a way to segway into this and it struck me that I am 6'4" and well north of 200 pounds so I might have particular credibility in suggesting that one size does not fit all. I respectfully submit to you that for quite some time the one size fits all premise has been an underpinning of much of North Carolina's coastal policies. As a consequence we are grateful to the Legislature for giving us this opportunity to consider certain options. I would like to suggest that the justification for the prohibitive policy which has been a policy for years is largely the idea that littoral movement of sand will give us islands and coastal landforms that seek their own equilibrium. Certainly, to a large extent, in many circumstances this is true. I would like to submit that it is equally true that the justification for that policy drops out in the case of managed or dredged inlets where the natural process is no longer controlling. Bald Head Island is in certain respects, especially the sensitive West and South beach area, is a poster child for managed or dredged inlets. This inlet has been dredged, gouged, engineered, moved and monkeyed with for 150 years or more. As a consequence I don't know that anyone can absolutely say what it would or should look like as a consequence of the natural processes. I think we can say without fear of contradiction that as a consequence of man's most recent intervention, in the form of the aggressive channel maintenance dredging that took place this past summer, we have had an unprecedented loss approximately four times the customary or usual rate of loss of sand than would have otherwise occurred during the natural erosive process. I would like to suggest that if we as a society through our government are going to mandate a critical interest, open and navigable channels, it is only fair that we equally mandate that those areas in those communities that suffer the consequences of that policy should be entitled to mediate or mitigate in some fashion. The opportunity for careful studied use of the terminal groin may present that opportunity or that technology. I want to emphasize that we want to add our voices to the entirety of coastal communities in supporting the opportunity to study this type of intervention through the use of the terminal groin wherever it is justified on the basis of sound science and sound policy. It strikes me personally that we currently have a fundamental anomaly in that when wildfires or perhaps flood waters threaten homes and lives we not only tolerate, but we demand a response. I would like to suggest that it should be no different in the case of the negative effects of uncontrolled erosion. Certainly we can expect that the response be safe and that it pose no collateral damage to other properties, but I think we would be reasonable in demanding or at least expecting that that opportunity be made available. I believe that in some respects many coastal property owners are perhaps in the grips of an illness at a time when the economy, politics, and the pressures that are being brought to bear on them demand that they be especially fit and well and vital. I would like to suggest that the careful, intelligent use of a terminal groin might well provide for that cure. It would prove to be good medicine and an instrument to be added to the doctor's bag. Or as someone else has said very well previously, it would be another tool to place in the box.

John Kluttz stated I would like to thank the CRC for the service that this Commission is providing to the public and carrying out your responsibilities in the interest of North Carolina and its citizens. I am a small business owner and an avid water sportsman. I speak only as a concerned citizen. I have had some opportunities to work with the North Carolina Coastal Federation and understand some of the things that they are doing in view of this current project. I think it is significant to note that North Carolina is one of only two states that have regulations

on the books forbidding the construction of terminal groins. In our state we only have two of these structures. I am not sure what that means because I think what you have heard here today and what the Commission is going to be going through is very complex, emotionally driven conversation. I don't know if the fact that we are only one of two states that forbid these whether in time will prove to be a sign of great wisdom from our community leaders and law makers. I think when I looked at what was going on with this recently there has been a review of the Moffatt & Nichol proposal by some folks with the NCCF. Even as complete and complex as that document is there are already some areas that have been identified as not clearly being addressed. I am sure you will have an opportunity to do so as this process moves forward. There is scientific data and good science supporting these structures as well as good science and data supporting that they shouldn't be there. We have a lot to go through. I am not here supporting either way. I am asking this Commission to approach this process with a well thought out and prudent review process regarding this proposal to change the law. The CRC should also ensure that the due diligence process fairly and equitably represents all of the interested parties.

Dave Dawson of Buxton stated I have the Cape Hatteras Motel and Croatoan Inn. I have been fighting the Atlantic Ocean for 38 years at the Cape Hatteras Motel. Back in the late 1970's and early 1980's I used to be a thorn in the CRC's side because I came to all of these hearings and ran my mouth. We had a meeting one time at the Ramada Inn in Nags Head, which at that time was the tallest structure on Hatteras Island or Bodie Island. They were trying to justify the existence of the CRC at the time. They showed a slide show. The slide show was my motel and two next door to it. They went on to say that they were trying to protect the cottage court atmosphere that had long been a mainstay on Carolina beaches. I was quick to point out that we were standing in the very type of building that they wouldn't let us build anymore while the cottage courts that they alluded to were washing away and that was 35 years ago and nothing has changed. We are still washing away. I have heard a lot about stabilizing the inlet area with these groin fields. The groins work. All you have to do is go to Google Earth, type in Bald Head Island, and take a gander at beautiful beach. I don't begrudge anybody from protecting their beach, but don't leave the rest of the coast hanging out to dry. What is good for the goose is good for the gander. Thank you.

Robert McFeeters stated I am a citizen of New Hanover County and here to represent myself and my family. I am against any relaxation in the law not permitting terminal groins. I think at best the science is mixed. The animals, birds and critters that were aforementioned to don't need terminal groins to be protected. With the science mixed, that means that they may do just as much harm as they may do good. If somebody hands you a pistol and told you that they thought it wasn't loaded, I don't think you would put it to your head and pull the trigger. I think terminal groins are the same thing. Thank you.

Michael Rice stated I live in Southport. I am afraid that I cannot enlighten you any on the technical aspect of terminal groins. But I do know a little bit about reports. I do know a little bit about laws. I look at the law that you are facing and the report that you are facing and I don't see a match. You have been directed by the Legislature to conduct a study of the feasibility and advisability of the use of terminal groins. You have a report that doesn't tell you that. It doesn't even try. It says on page one that this report is a fact gathering effort. It does not advocate any policy. Where are you going to get it if not from this report and from these experts that you have paid? We look through the report and we hope there are some conclusions in there that you might find as guidance. At the end of the report in the conclusion section there is nothing. They are leaving that to you. When you go down each of the six points, each one of those has a place for conclusions. Sometimes there are conclusions, but they are very timid. We can either

conclude from that that your consultants are just shy people and unwilling to say what they think or there is not enough in the science that they have looked at to draw conclusions. They are leaving that to you and your staff in the next six weeks. That is a very difficult job. This is an important policy issue. What you are considering is changing a policy that has been long standing in this state. This is not something to be done lightly. There is one area here that did emerge in some of the conclusions. There is an agreement that beach erosion in the vicinity of navigation channels is due to the sediment traps caused by dredging. That clearly is the problem at Bald Head Island and several other places. This tells us that there is a larger issue here. By the way, item six in your list doesn't appear to have been addressed to any extent in the report. It is also larger in other ways. There is a Beach and Inlet Management Plan that has been held captive somewhere. That speaks to the very same issues. This report and that cannot be considered separately. Ladies and gentleman I believe what you have got here is a situation where in the next six weeks there is very little you can do to reach any kind of conclusion that would change the current legislative situation. I believe the Legislature deserves more of a study than this if they are going to be asked to change that policy. Thank you.

Todd Miller stated I would like to thank the Commission for the job that you are doing. It is not an easy task and you are dealing with a public policy issue that is of critical importance not only to the people sitting in this room but to many future generations. This Commission since the early 1980's has had as its basic policy when it comes to ocean beaches that it is the top priority to protect the beaches. In situations where you can protect private property and protect the beach, you have made allowances for that. But never have you sacrificed the beach to protect private property. I hope as you go forward in making these considerations over the next six weeks that you will not abandon this basic policy. There has been a lot of discussion about the input from the Science Panel in this process and I hope everybody will go to the website and read the draft report and the comments that have come in both from the public and from the science panel. I looked at the five sets of comments that did come in from the Science Panel. The comments came in from two engineers, two geologists, and one biologist. Quite frankly, I found it amazing the amount of agreement in the comments. I think the Science Panel has struggled with this over its last four meetings. They are trying to talk about this in a scientific and technical manner and not in a political manner. There has been a lot of discussion about the economics of this issue and I would just like to speak on behalf of someone who spends a lot of time playing and recreating in an inlet. If you go there any day in the summer there are thousands of people enjoying these inlets, these natural inlets. Those inlet shoals which are critical wildlife habitat and are a major economic engine for the State when you think about the boating activity, the fishing activity, and all the things that go on around these inlets. Anything that would interfere with that type of activity is going to have a negative economic impact on our state. So it is good to think about the positive economic impacts that come from shifting inlets as well as being concerned about the negative concerns with erosion. There has been some comments made about who will pay for these structures if they are allowed. I want to point out in the Bogue Inlet project that it was built originally as a local project. The costs escalated over the course of doing that project and the state of North Carolina was asked to step in and help fund that effort as well and became a major payer even though the original intent was that it would be locally funded. There have been recommendations that we think about going back to the variance process and I think there has been some discussion about why that process was taken away by the Legislature. Let's not kid ourselves; there was a lot of politics in that process. The decisions that came out of it were not strictly made based on the science in front of us. The question is who should be playing politics here, the Commission or the Legislature? If it is going to be a political decision then let's leave that in the Legislature's hands. This option as we have all learned today is not a simple solution to the problems. Beach renourishment will have to continue. The annual maintenance costs based on figures I have seen in the Beach and Inlet

Management Plan actually exceed what many communities are currently spending on beach renourishment. You are going to have those costs in addition to the cost of building these structures and the continued cost of nourishment. If anybody thinks this option is going to save money, I am afraid they have been sorely misled. At the beginning of this effort there was a notion that there were terminal groins everywhere and that they had a proven track record and we knew what they would do. Obviously through this study we have found that there aren't that many examples of these structures in existence that meet the criteria of what we are talking about in North Carolina and that the track record is very unproven. Even looking intensely at five case studies we have not found definitive answers in terms of what the impacts have been. In your permitting process if you face uncertainty in terms of what the actual impacts of a proposal are going to be, the way the Coastal Area Management Act is written, you are under the obligation to issue those permits. If you are uncertain that something is going to work or not work, the burden is on you to show that it will not work or you will issuing the permits. If you are comfortable being wrong ten percent or twenty percent or fifty percent of the time then take on that burden. I would ask that you think about the consequence for beaches and the rest of the citizens of North Carolina if you make wrong permit decisions. As we have seen with sandbags it is not easy to undo these actions once you set a policy and go forward with it. It would be nice to be naïve enough to think that we would pull out mistakes, but that is not the history anywhere. The history is that we keep adapting, expanding and multiplying when the first initial attempts do not work and the efforts just continue to escalate. Long-term people are going to need answers and alternatives. I am just sorry that this isn't an easy, simple solution to the problems that people are facing. We are in a period of rising sea level and storm activities. These issues are not going to go away and the problems in dealing with them are going to increase no matter what policy course you decide to take. Thank you.

Carolyn Pryor stated I am here representing Coastal Water Watch, an environmental group that is concerned with the water sheds of Brunswick County. We are very concerned about any change in the law that would affect our beaches and our wildlife here in North Carolina. My husband and I run a sailboat charter business and we sail in and out of the inlet over 100 times per year between Oak Island and Bald Head Island. We think that the tourism business that comes here doesn't come just to have a house on the beach. They come here to see the natural beautiful beaches that we do have and the wildlife that we have. We think that the laws here in North Carolina that have protected the beaches against hard structures have been very wise. We do not believe that there has been any new information to show that hard structures would be better than they were back when that decision was made in 1984. Our recommendation is that we try to consider the loss in tourism dollars if we effectively put in these groins that may save some inlets but it's also going to change the shifting dynamics that could cause new inlets to develop as more rapid inflow comes in to the dredged inlets. It could cause more damage to other property because of increased storm surge coming in these specified inlets. We hope that the laws will stay as they are. We think that the beach nourishment and the sandbags isn't a way to effectively deal with the problem. It could be just as cost effective as the other groins that allows flexibility if we do get sea level rise and other storms that could make the terminal groins in fact become obsolete or ineffective or possibly doing even more damage than we would like. Thank you for considering. I hope that we will leave the rules as is and add to the report the economic effects of a decrease in tourism that could come from putting in terminal groins. Thank you.

Frank Iler, District 17 Representative, stated this is the fourth time we have met like this. You all have met five times but I missed one of those. Next time the report will have been completed. I wanted to come today to wrap up a few things that I have mentioned before. Hopefully it will help in the process. I am here to help. I asked you last time to keep an open mind about this. It

is obvious that confusion still exists in the public about what a terminal groin is from the descriptions I have been hearing. Let's look at what we have got here. We have a bill in the Legislature which is in a House committee, the Environmental Committee. It passed the Senate 30-20. It crossed over so it is eligible to be taken up this year. It is in the Environmental Committee and based on the CRC's recommendations, Speaker Hackney and Chairman Allen will probably act on it favorably or unfavorably based on what you recommend. Again, as I have said before, this is another tool in the toolbox for coastal management. If we need an amendment to the bill to avoid you being forced to permit them that can happen. I am sure Chairman Allen would love to amend it to that affect in the Committee or on the House floor. We are asking for a chance to vote. The people's representatives in the Senate thought it was a good idea. The people's representatives in the House probably think it is a good idea, but we don't know that until we debate it and vote on the floor. Then the Governor has a chance to sign or not sign it. That is the basis of what we are talking about. Based on your recommendations something could happen this year. I want to thank everybody. I know from coming to your meetings how much effort you have put into it. I apologize for being late today. I came from the Department of Natural Resources in Raleigh from a meeting and we may have resolved something at Oak Island and the sewer system there today. Thanks for your efforts and I will repeat one thing that I said before, if not this then what? If not now, then when?

Tripp Murphy and Dave Pryor signed up to speak but did not make oral comments.

ACTION ITEMS

Rule Adoptions

15A NCAC 07H .2302 General Permit for the Replacement of Existing Bridges and Culverts – Approval Procedures

15A NCAC 07H .2303 General Permit for the Replacement of Existing Bridges and Culverts – Permit Fee

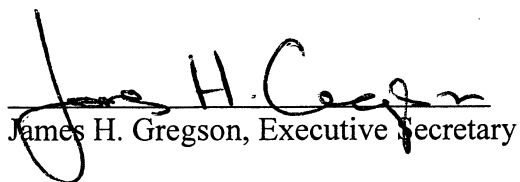
15A NCAC 07H .2304 General Permit for the Replacement of Existing Bridges and Culverts – General Conditions

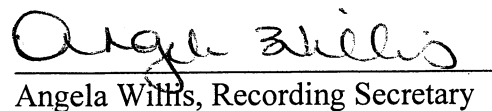
15A NCAC 07H .2305 General Permit for the Replacement of Existing Bridges and Culverts – Specific Conditions

Lee Wynns made a motion to adopt 15A 07H .2300 General Permit for Replacement of Existing Bridges and Culverts. Veronica Carter seconded the motion. The motion passed unanimously (Elam, Wynns, Carter, Leutze, Mitchell, Webster) (Wilson, Weld, Bissette absent for vote) (Simmons abstained).

With no further business, the CRC adjourned.

Respectfully submitted,


James H. Gregson, Executive Secretary


Angela Willis, Recording Secretary