



DEPARTMENT OF PLANNING AND ZONING
NORTHAMPTON COUNTY, VIRGINIA

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**NORTHAMPTON COUNTY
WETLANDS BOARD**

**Minutes
March 18, 2009**

This was the regular meeting of the Northampton County Wetlands Board held in the former Circuit Courtroom located at 16404 Courthouse Road in Eastville, Va., for the purpose of conducting regular business on Wednesday, March 18, 2009.

Those members present were Marshall Cox, Chairman; Bowdoin Lusk, Vice-Chairman; Robert Meyers, John Chubb, Nancy Wells Drury, Scott Walker and Dot Field.

Also present were Melissa Kellam, Zoning Administrator; Katrina Hickman, Zoning Inspector; and Kay Downing, Secretary to the Wetlands Board. Mr. Hank Badger from the Virginia Marine Resources Commission was also in attendance.

The Chairman called the meeting to order at 11:00 a.m. and established a quorum. The Board and staff were then introduced.

The Chairman asked that all those in attendance wishing to speak at today's meeting to please stand and be sworn in.

It is noted for the record that the Board and Mrs. Hickman visited the Anderson property this day prior to the meeting.

Public Hearings:

A. Continuance of VMRC 08-1633: Charles Hugo has applied to construct a replacement bulkhead on property located at Butlers Bluff Subdivision on the Chesapeake Bay. The replacement bulkhead will be of timber and vinyl construction and be placed landward of the former and somewhat remaining

structure. The bulkhead will be 173 feet in length with a 10-12 foot return wall on the south connecting to an existing bulkhead, and a 30 foot return wall on the northern end. There is no bulkhead to the north, only standing piling from a former structure. Class III or armor type stone should be placed at the base of the structure as a scour apron. The property is described as being parcel 17 of Tax Map 112F, double circle 3.

Ms. Ellen Grimes, agent for the applicant, stated that the Virginia Institute of Marine Science (VIMS) had submitted additional comments on the revised project plans of January 13, 2009. Revisions show that the toe of the proposed revetment will be placed at or within 10 feet channelward of the existing bulkhead alignment on Lot 16, making the encroachment impacts less than or equivalent to the originally proposed bulkhead with rip rap toe protection (8/25/08 drawings). The project plans to install a vinyl or treated wooden return wall on either side of the revetment. The southern return wall will connect to or abut the existing southern bulkhead. The revised drawings note that the existing failing bulkhead is to be removed.

Ms. Kellam noted that the original staff report has not been revised, but that the additional comments from VIMS are to be part of the official record. Since the Board had received those comments they were not read into the record, but are included as follows:

At the meeting of February 18 the Board made an official request asking VIMS to comment on the revised drawings that propose a riprap revetment. Specifically, the Board was interested in the following items: (1) how would a riprap revetment compare to (a) just sloping the bank with no structure neither to an acceptable even slope or terracing, (b) a bulkhead, and (c) a breakwater or breakwater system; (2) how would these different projects affect the adjacent property owners; and (3) to identify any design options VIMS would consider unacceptable for this project area.

The following comments were received from Karen Duhring, Marine Scientist, in response to the Board's request.

(1) How does a riprap revetment compare to just sloping the bank with no structure either to an acceptable even slope or terracing?

Bank grading and terracing without any toe protection structure is a preferred, non-structural method to stabilize erosion. Bank grading provides a slope for wave run-up and dissipation. Graded banks without toe structures at Butler's Bluff would be expected to have occasional erosion events at the bank toe during storms or prolonged wave action. Upland runoff over the top of the bank also contributes to on-going erosion in spite of grading. Re-vegetating graded banks with a dense cover of deeply rooted plants is always considered necessary to provide protection from rainfall, runoff and wind erosion.

In the process of trying to reach a stable slope, some banks have already slumped to a slope of two to one or flatter at the bottom. These areas may be colonizing with vegetation or already vegetated. The top of the bank remains vertical and unstable. Upland runoff and heavy trees can contribute to continuing, or catastrophic bank failure. Selective grading of the unstable portions followed by re-vegetation with native small trees, shrubs and deep-rooted grasses is appropriate.

A revetment protects the bank toe from wave attack and weights the toe of the bank to help minimize slipping and soil collapse. A revetment alone will be effective if tidal wave action is the primary cause of erosion. It may not be sufficient by itself if upland runoff, wind, groundwater movement and freeze-thaw cycles also cause the erosion, which is likely the case at Butler's Bluff. A revetment combined with bank grading will provide protection from regular wave action at the toe and address unstable areas at the top of the bank.

(2) How does a riprap revetment compare to a bulkhead?

Bulkheads are not appropriate bank toe protection structures for this high-energy location. The repeated failures of timber and vinyl bulkheads along this shoreline suggest the wave climate exceeds the typical design standards. Low retaining walls may be appropriate at higher elevations on graded and terraced banks to facilitate the growth of vegetation and/or gain access to the shoreline.

Although revetments may cover more square footage than bulkheads, they have less adverse effect on nearshore wave dynamics because they dissipate wave energy as opposed to bulkheads that reflect energy. Also, revetments are less environmentally intrusive, they can be buried with sand and they can trap sediment and support vegetation in certain settings. Revetments have greater life expectancies than bulkheads because the materials do not degrade readily in the marine environment.

(3) How does a riprap revetment compare to a breakwater or breakwater system?

Offshore breakwater systems are preferred over revetments for sandy beach shorelines because they include a wide sand beach in the design. The beach provides a physical barrier to wave action and storm events, while it also provides habitat, recreation and aesthetic benefits. Sandy beaches are a limited but valuable shoreline ecosystem in the Chesapeake Bay estuary and offshore breakwater systems are an effective method for stabilizing upland erosion adjacent to sand beaches.

In addition to higher upfront construction costs, the disadvantages of offshore breakwaters include the expertise needed for site-specific designs and the length of shoreline required to allow for stable embayments to form in the lee of the structures. Single and double breakwaters placed on small sections of shoreline can adversely

interfere with sand transport, cause downdrift erosion effects and may not be able to maintain enough beach to reduce wave action and erosion at the bank toe. Offshore breakwaters may impact important nearshore habitats, including submerged aquatic vegetation and productive shellfish beds. Construction access to install breakwaters and import sand for beach fill can be problematic in developed high bluff communities such as this.

(4) How would these different projects affect the adjacent property owners?

One adjacent lot is bulkheaded. The other adjacent parcel is currently undeveloped and natural.

Any type of structure on the Hugo parcel may increase erosion of the unprotected shoreline to the north due to reflected wave energy. Bulkheads transfer a greater amount of energy than revetments. A new structure on the Hugo parcel should not have a noticeable effect on the adjacent bulkheaded shoreline, if the bulkhead has sufficient depth of penetration below ground and it is maintained in good repair.

An offshore breakwater system that includes the adjacent parcels would provide a wide, stable sand beach across the parcel boundaries. A short breakwater placed only on the Hugo shoreline may have adverse effects on sand transport without reducing the erosion problem.

Graded banks should transition gradually into adjacent ungraded banks to prevent the creation of new erosion areas. Offshore breakwaters may have transition structures at each end of the system to tie into adjacent shorelines and prevent adverse downdrift erosion effects, such as spurs or revetments.

(5) Are there any design options VIMS would consider unacceptable for this project area?

The repeated failure of timber and vinyl bulkheads at Butlers Bluff suggests this method is not appropriate. Revetments constructed with undersized stone are also unacceptable. Short, piecemeal breakwaters are usually not effective, especially for shorelines less than 200 feet in length.

The piecemeal installation of groins is also not advised. A carefully planned groin field across multiple parcels with beach nourishment is another possible option, but this method may not be effective where a high level of protection is needed.

Conclusion

All shoreline stabilization practices have ecosystem and other tradeoffs. The natural shoreline condition should be stabilized only if necessary to protect upland property from active erosion.

As stated in the previous VIMS report, extending the existing breakwater system just north of the Hugo parcel to the south would be the ideal solution in this case, but only if all of the parcels in between can be included.

If this approach is not possible and only the individual parcel shoreline can be treated at this time, then a sloped revetment with bluff grading and re-vegetating is an appropriate alternative. The revetment can be partially or completely buried under sand if an offshore breakwater system is eventually possible.

The proposed stone size, extent of channelward encroachment (6-10 ft), the depth of the buried toe (3 ft), target slopes for the stone and the graded bank, and the return walls at both ends of the revetment all appear to be appropriate and certainly preferable to a bulkhead. The proposed removal of derelict bulkhead pilings is also beneficial.

The original staff report of October 15, 2008 and comments received from VIMS are as follows.

BACKGROUND INFORMATION AND FACT FINDING FOR VMRC # 08-1633

VIMS Recommendations: *The repeated failure of timber and vinyl bulkheads and noticeable beach erosion at Butlers Bluff indicates this is not the best method for bluff stabilization. The proposed toe scour protection using quarry stone may improve bulkhead longevity, but adverse effects are still expected.*

An offshore breakwater system with beach nourishment is the most effective toe stabilization method for Butlers Bluff. This is best accomplished with multiple property owners that are cooperating to restore a wide, stable sand beach across property lines. If this approach is not possible, then a sloped revetment at the bluff toe is another effective alternative to consider. Bank grading would provide additional stability on the face of the bluff to improve growing conditions for vegetation.

If a bulkhead with toe scour protection is permitted, then these structures should be placed as far landward from wave action as possible, while still allowing sufficient area for bank grading and terracing. If a house has not been constructed yet, then bank grading landward from the existing bluff toe is advised instead of placing the bulkhead 10 to 15 feet channelward from the toe of the bank. The design specifications should also be improved over previous failed bulkheads if possible.

Time of year restrictions for protected species may be required by state or federal agencies, particularly for the northeastern beach tiger beetle.

Adjacent Property Owners: *No correspondence received.*

Staff Recommendation: *Staff concurs that an offshore breakwater system would be the best approach, but may not be possible without the cooperation of the adjacent property owners. The second favorable approach would be a riprap revetment. Because the applicant has submitted a*

request for a bulkhead with toe scour protection, it must be considered. It is the staff's recommendation that the bulkhead with toe scour protection may not be the best, but is a reasonable approach with the a limited life span, should be approved with the Board's consideration of the VIM's recommendations as conditions.

Mr. Chubb asked Ms. Grimes about the installation process. Ms. Grimes stated the bluff would be re-graded and re-vegetated after it is basically dismantled from top to bottom. This will result in approximately 30 feet of upland yard being lost in order to accomplish the appropriate grade. She added that a Water Quality Impact Study and erosion control measures would be submitted for approval as part of the Plan of Development.

Mr. Meyers asked Ms. Grimes to describe how the stone would be placed. She stated that the bank would be peeled back and leveled or terraced to allow the stone to be transported by at excavators. The excavators transfer stone down the terraced bank to the beach and then the excavators come back up the terrace and place the remaining stone after the first two layers of stone are in place.

Ms. Kellam added that terracing is permitted by the Bay Act in such cases as this.

The Chairman called for any other public comments. There being none the hearing was closed.

Mr. Meyers noted that he had investigated the erosion rate of the area by comparing photos (Google Earth 2007) and the 2002 county tax maps and measuring from the southern property line to the road. By his calculations there has been approximately 5 feet of erosion since 2002.

Mr. Chubb stated his opinion that erosion at the original bulkhead site is over 5 feet when viewing the property. Mr. Meyers noted that he could not find information on the original bulkhead.

Mr. Lusk stated his opinion that in the absence of offshore breakwaters this revised project is a viable alternative as previously proven on other nearby parcels.

Mr. Walker inquired about the depth of the toe. Ms. Grimes stated that the toe should be at least six feet below the low water mark and referred to Item 4 in the VIMS comments.

Mr. Meyers stated his concern about the potential impacts to the unprotected properties to the north.

Action:

After reviewing information submitted by Karen Duhring of VIMS, the Board voted to approve the revised project and drawings as submitted. Motion to approve the revised project was made by Mr. Lusk and seconded by Mr. Walker. The motion carried with Mr. Meyers opposed. During discussion it was noted that a Water Quality Impact Assessment must be approved by the county as well for the upland land disturbance and re-vegetation.

The second public hearing was then called to order.

B. VMRC 09-0080: Richard P. Anderson has applied to repair approximately 115 feet of riprap revetment. The toe depth will be increased by 2.5 to 3 feet and encroachment will increase by approximately 2.5 to 3 feet from existing. The second part of the project proposes to remove approximately one-half the length of the two northern most breakwaters and reposition them channelward to create an embayment that does not erode the revetment. Approximately 9 feet will be added to the length of the southern breakwater and approximately 10 feet will be added to the length of the northern breakwater. The gap will remain 50 feet and the additional structures will terminate 30 feet from the channelward side of the existing breakwater. The property is described as being parcel A of Tax Map 12C, double circle 1, located at the cul-de-sac of Peaceful Way with frontage on the Chesapeake Bay.

Ms. Kellam read the staff report and the VIMS report into the record as follows. She stated that no opposition or comments have been received from adjacent property owners. While reading the VIMS comments Ms. Kellam noted some corrections.

BACKGROUND INFORMATION AND FACT FINDING FOR VMRC # 09-0080

***VIMS Findings and Recommendations:** There are four existing breakwater structures already in place on this shoreline and the beach profile appears to be relatively stable. Re-positioning a portion of two breakwater structures is proposed to address a problem erosion area. Repairs to the existing 115-foot revetment are also proposed, including a deeper buried toe.*

Now that it is in place, the 115-foot revetment should be designed to stand on its own. Larger stone in the armor layer and burying the toe deeper appear to be necessary. The beach area maintained by the breakwater sills should not be expected to prevent toe scour erosion at the revetment, especially if the beach profile routinely changes landward from the sills.

It is difficult to predict what the effect will be of the proposed sill re-positioning or if it will have the desired effect. Reducing the width of the 50-foot gap is another option to consider. Maintaining a straight alignment with a narrower gap may be all that is necessary to reduce wave action and erosion at this embayment.

Adjacent Property Owners: *No correspondence received.*

Staff Recommendation:

It should be noted that the proposed two new breakwater sills are not within the NHCOWetlands Board's jurisdiction. Without an engineering analysis of the proposed redesign, it is hard to figure out what effect the proposed project will have on the shoreline. It is evident that the initial design has created a stable beach area, but is now in need of repair. Staff recommends approval of the needed repairs to the existing revetment and breakwater sill systems as initially designed. If the Board chooses to approve a re-design

of the breakwater sills, staff recommends that it be based on the VIMS recommendation of maintaining a straight alignment and reducing the gaps between the breakwater sills.

Ms. Kellam added that revisions have been made to the original application and that the Board's jurisdiction does not go beyond the mean low water mark.

Ms. Grimes, agent for the applicant, stated that the applicant wishes to repair the existing riprap structure at the south end where the original structure was installed that has now created a coastal primary dune to the third breakwater. From there the project breaks down somewhat and it was her opinion that it should have originally been placed a little farther bayward. The plan is to "cock" the halves out giving more seaward space creating a more shallow embayment. Ms. Grimes explained that leaving a more narrow gap in between the structures would create a more intense water speed resulting in wash out and erosion. She recommended that a distance of no less than forty (40) feet be left between breakwaters.

Ms. Field asked if the original design was for an offshore breakwater system or breakwater sills. Ms. Grimes confirmed that the original design was for sills but that they were built taller than what appears due to the sand accretion.

Ms. Field also asked if sand was used as fill originally. Ms. Grimes stated that four truck loads of sand had been installed at the north sill which quickly disappeared into the whole system and no other fill was used. She reminded the Board that just a small portion of the existing system is being "tweaked" or slightly augmented.

Mr. Lusk stated his observation that at the revetment there appears to have no problem as stones are in place and vegetation established with no scour. He did note that there appears to be one little problem area at one embayment. Ms. Grimes stated that the bottom of the revetment toe is not deep enough at times and severe northeast storms reveal filter cloth as well. She added that the applicant is trying to be pro-active to preempt destruction of the system as a year ago the toe was exposed and some rocks were being displaced. She added that the objectives are: (1) to deepen the toe and add large rock and; (2) move the embayment out. The backside of the project reveals some deep holes due to a swirling effect of the water. She added that some chinking is needed in the sills where stone has been loosened. Moving the embayment would help to slow the speed of the water flushing out.

Mr. Walker asked if a wave study had been done for this project. Ms. Grimes replied no. He also asked if the waves break over the existing sills and she replied yes. He suggested that the applicant might want to consider deferring the wave action before it hits the existing stone structures.

Mr. Meyers stated that VIMS did not address sand replenishment when the original application was approved. However, Ms. Kellam stated that originally the county did permit beach replenishment as part of the project. Mr. Meyers also noted that he had

visited the property and taken his own measurements which did not coincide with those submitted in the application. It was his opinion that the project drawing should be revised to reflect current measurements and not those that existed when the original project was permitted in the past.

After reviewing the submitted drawings Ms. Kellam stated that the sill angle appears to be over-exaggerated. Ms. Grimes stated that the idea is to flare the tips of the existing sills to deflect wave energy in a more effective and different direction.

When asked by Mr. Walker, Ms. Grimes stated that the sills were made from Class II and III stone and that Class I stone ranging from 50 to 150 pounds will be put in place as needed.

Answering other questions, Ms. Grimes noted that the southern gaps are working well; however, the northern end is different since a sand spit exists there. She explained that the existing sill or revetment would need to be dismantled 5 to 10 feet at the end in order to install the new ten-foot curve ten feet channelward of the existing toe. Ms. Grimes also explained that five feet added to each sill end to accommodate a 40-foot gap in between each sill should prevent sand deprivation to the south.

The Chairman called for public comments. There being none the hearing was closed.

Ms. Field suggested that the Board should allow a design that causes less impact to the existing beach and be less disruptive to the tiger beetle population when digging up rocks.

Mr. Walker suggested that the Board remand the application to some other agency for modeling purposes to take into account wave forces and littoral movements.

However, Mr. Lusk and Ms. Drury disagreed noting that the proposed revision to the original project is within the parameters of VIMS recommendations.

Action:

Motion was made by Mr. Lusk to approve the application as suggested by VIMS with the following stipulations: (a) breakwater/sills are to remain in a straight line but can be augmented by an additional five (5) feet on either side; (b) a revised drawing shall be submitted to the Board; (c) all breakwater/sills may be replenished with smaller rocks to slow the existing water flow where needed; and (d) rip rap revetment must be repaired in the embayment where erosion has taken place. The motion to grant conditional approval was seconded by Mr. Walker and carried unanimously.

Old Business

It was noted that a Shoreline Protection Workshop was held on March 5 at the Palace Theater in Cape Charles and had been well attended.

As a note of interest Ms. Field stated that a recent clean-up effort at Kiptopeke State Park had resulted in the removal of old bulkhead materials that had supposedly come from Butlers Bluff Subdivision. The Chairman also noted that westerly winds will cause debris to flow from the western shore as well.

New Business

Ms. Kellam reported that no new applications have been filed to date. She noted that she will research clarification language in defining sills and breakwaters for the Board's information. She also stated that the Wetlands Ordinance and Subdivision Ordinance need to be updated.

Ms. Hickman informed the Board that she has visited Butlers Bluff Subdivision and has discovered excessive clearing and other possible violations. Mr. Meyers confirmed her observation that the dune had been taken out at one site which he observed as well while flying over the area.

Statements from the Public

No public comments were made.

Consideration of Minutes

The minutes of February 18, 2009 were approved with one correction to page 6 under Old Business, where Nancy Drury made the primary dune comment and not Dot Field. Motion to approve as corrected was made by Mr. Walker and seconded by Mr. Chubb.

Adjournment

There being no further business the meeting was adjourned at 12:10 p.m.

Chairman

Secretary