Northern Neck Master Gardeners

Virginia Cooperative Extension
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Heathsville, VA 22473
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www.ShorelineNNMG.weebly.com
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Subject: Requested Shoreline Evaluation

To: Deb Beutel, Corrotoman by the Bay Association (HOA)
PO Box 99, Mollusk, VA 22517, Lancaster County

From: Northern Neck Master Gardeners – Shoreline Evaluation Program (SEP)
Volunteers: Carol Martin, Susan Lindsey, Gail Cooper and Ian Cheyne

Date: November 25, 2019

We conducted a site visit to the subject property on October 17, 2019 and again on November 3, 2019 in response to your request for advisory assistance to assess the property shoreline and bank. Volunteers from the Northern Neck Master Gardener Shoreline Evaluation Program (SEP) simultaneously consider all property elements and the cumulative impact of activities within the upland, riparian buffer, intertidal, and tidal areas. We use Virginia Institute of Marine Science (VIMS) and VIMS Center for Coastal Resource Management (CCRM) as a primary source of scientific information on shoreline erosion evaluation and management.

Based on your application your major areas of concern are:

- Shoreline Protection
- Shoreline Restoration
- Habitat Development or Restoration
- Shoreline Management

Property Characteristics and Surrounding Conditions

Mailing address: PO Box 99, Mollusk, VA 22517
Location/county: Lot 7, Corrotoman Drive, Lancaster County
Body of Water: Western Branch Corrotoman River
Size of property: Approximately 0.5 acre
House setback from water: N/A
Height/heights of bank: 15-25ft
Feet of Shoreline: greater than 100 feet (owner's estimate)
Exposure: North and North East
Longest Fetch (distance across open water over which wind blows) is 0.6 miles measured NE from the shore (which is considered moderate).
Shoreline description: undefended.
Adjoining properties: undefended
Gutters: N/A
Downspouts empty into: N/A
Dry wells or French drains: N/A
Hardscape on property: None

Introduction:
This evaluation is part of a request to evaluate five contiguous lots with three separate ownerships in the Corrotoman by the Bay development. They are part of a peninsula formed between the Western Branch of the Corrotoman River and Senior Creek. See attached map showing the property location (Attach 2). The properties, lots 3a, 4a, 5a, 6a and 7 are situated between the Corrotoman River and a development road, Corrotoman Drive (Photo 1). They are quite narrow and are essentially a shoreline and a bank which terminates on the development road. Directly across Corrotoman Drive are the homeowner's residential lots and homes with water frontage on Senior Creek.

The key concern is that Corrotoman Drive is the only access to these residences and erosion of the subject lots threatens the integrity of the road. Lots 1 & 2a at the end of the peninsula have already decided to proceed with a rip rap revetment and bank deforestation, grading and revegetation with native grasses and shrubs. Their proposal, prepared by Bay Design, was approved by the Lancaster County Wetlands Board on November 14th (Attach 6). However, the other lot owners were interested in a more environmentally sensitive solution and requested an SEP evaluation to consider other options.

The lots have many similarities but there are also differences between each. The evaluation has been approached by first presenting an overall evaluation of the combined properties covering the common elements and recommendations and then specific elements for each individual property. The subject property, lot 7, is owned by the HOA and the others by individual homeowners.

General Evaluation of the combined shoreline of lots 3a, 4a, 5a, 6a, and 7
The following is a summary of the common elements of shoreline protection for all the lots evaluated.

Upland:
The peninsular is part of a gently curving bay in the river facing north to northeast and the subject lots have a maximum fetch to the north of about 0.6 miles, which is considered moderate. Towards the end of the peninsula, lots 1 & 2a, the northerly fetch increases to 1.4 miles and there is also about 0.9 miles exposure from the SE. The peninsula western shoreline is more protected from the north and the south.

On the evaluated northerly side, the properties have steep banks between 15 to 25ft high, decreasing in height towards the end of the peninsula. The shoreline bank is primarily sand with a thin veneer of organic material composed of humus and mosses. It is forested with trees, shrubs, vines and various ground covers. Where the bank is undisturbed the surface veneer is quite tough. Where the vegetation has been disturbed, bank collapse is evident. The lots towards the end of the peninsula, lots 1, 2a, 3a and 4a have lost a significant amount of vegetation and protective veneer (Photo 2). There is also significant upper bank erosion and bank collapse. Residents say no vegetation has been removed. It is possible that the increased tree wind exposure at the end of the peninsula resulted in the flexing of their roots and eventual soil disturbance and erosion. There are some early signs of soil disturbance on the upper parts of the bank for Lots 5 & 6 but none was observed on Lot 7. In places, the bank is also subject to storm water runoff from Corrotoman Drive which may be an additional factor. Because this is a sand spit, preservation of the slope's protective veneer is important to the integrity of the bank.

Tidal/Intertidal:
At high tide the river water rises up against the bank. There is tidal erosion undercutting along the bank (Photo 3). At low tide there is a sand beach approximately 10 to 15 ft wide depending upon the tide and the location on the shoreline. Because the shoreline is north facing and there are overhanging trees blocking sunlight, there is little intertidal vegetation except for a few patches of shoreline grasses where the upland vegetation is thin. The shoreline is also filled with accumulated debris of dead branches, roots and fallen trees (Photo 3).

Offshore:
Immediately offshore the bottom is sandy and water depth was observed to be shallow and mapped less than 3ft at least 20ft offshore (Ref.1 – VIMS CCRM Lancaster County Shoreline Portal). Also, the area offshore is designated as a potential area of sensitive sub-aquatic vegetation, SAV (Ref 1). This designation significantly affects the process for approval of any installation seaward of Mean Low Water, MLW. Rather than just Lancaster County, additional approvals are required from the Virginia Marine Resources Commission (VMRC) and the Army Corps of Engineers. Recent consultations have suggested that this could be a problem, particularly with the Army Corps who have rejected projects that intrude into potential SAV areas. (Sources: VIMS, VMRC and Lancaster County)

VIMS/CCRM Recommendations:
The following recommendations are made as a result of the site visit and analysis using the VIMS/CCRM Best Management Practices and Decision Tree for Undefended Shorelines plus recommendations available on the Lancaster County Comprehensive Map Viewer (Ref.1). A copy of the decision tree is attached (Attach 3). A copy of an aerial map from Google Earth showing the shoreline and fetch is also attached (Attach 4).

The decision tree recommendation for forested shorelines with eroded shoreline and banks up to 30 feet is to manage the forest to prevent tree falls and address the shoreline erosion. For a moderate fetch, the recommended erosion protection is a marsh with sill.

For the evaluated properties on the CCRM Lancaster County Comprehensive Map Viewer there is no shoreline protection recommendation because of the SAV designation. The shoreline protection recommendation for neighboring properties on either side of the SAV zone is a living shoreline. The same conditions apply along the subject shoreline. It is suggested the best living shoreline option in this situation is a marsh with sill.

However, in this particular situation there are two additional significant protection selection considerations that could affect the viability of these recommendations:

a. The offshore SAV designation may limit protection options
b. A critical requirement is to protect the viability of the residential access road

Because a living shoreline is a possible alternative to the proposed revetment, a preliminary evaluation was performed to assess the viability of each and their pros and cons.

The following are some requirements to install a marsh with sill in this situation:

a. The recommended marsh slope for a living shoreline is 1:10. (Ref.2)
b. To provide long term protection the marsh slope should meet the existing shoreline significantly above the tidal undercutting such that a normal high tide will not reach the existing bank.
c. Because the bank is steep and undercut in places, this situation will probably require a transitional living shoreline. That means a section of steeper slope will be constructed between the marsh and shoreline bank joining the bank above normal high tide. This section will integrate into the existing bank and be planted with high marsh vegetation. See sketch (Attach 5).
d. The supporting sill should be below water at high tide
e. Normal high tide should flood enough of the reconstructed beach slope to support a grass marsh. A marsh a minimum of 15ft wide is recommended.

Because a marsh with upland transition appears to be necessary, that will probably require the extension of protection beyond Mean Low Water (MLW) and given the SAV designation will require additional approvals from VMRC and the Army Corps. In summary, a preliminary evaluation suggests that a living shoreline with a marsh sill is feasible providing:

a. The tree cover can be pruned back to allow enough light to allow vegetation of the marsh and the upland transition.
b. Offshore water depths are as assumed and suitable to allow a workable design.
c. The transition slope will be able to accommodate near-term sea level rise.
d. Approvals can be obtained from VMRC and the Army Corps to intrude beyond MLW.
e. Satisfactory integration of lot 3a is possible with the proposed revetment on lots 1 and 2a

The marsh with sill offers some advantages and also presents some issues:

a. Retention of existing vegetated slope.
b. Access to the foot of the bank at low tides.
c. Approvals from VMRC and the Army Corps are potential obstacles.
d. Integration with the proposed revetment may be a challenge for lot 3a.
e. Long term stabilization of the upland bank may be an issue, particularly for lots 3a and 4a.
f. To preserve the forested bank, construction from the water may be necessary.
g. VIMS predicts that sea-level will rise about a foot in the Chesapeake Bay by 2050 as measured at Norfolk, VA (Ref 3). As water levels rise, the marsh will recede towards the bank. So that, ultimately, the current situation will be replicated requiring raising of the marsh.

The living shoreline protects the shoreline from tidal and wave energy erosion. However, it does not protect the bank from the effect of wind in large trees causing root movement and slope destabilization.

Alternative Consideration:
Given the two key concerns of SAV protection and that of slope stability, an alternative protection is to consider the revetment proposal for Lots 1 & 2a or similar. This proposal for installation on lots 1 & 2a was approved November 14th by the Lancaster County Wetlands Board. The approved drawings are attached (Attach 6).

The proposed revetment with a graded slope offers some advantages and also presents some issues:

a. The revetment is designed to protect the foot of the bank and at 7ft high may offer longer term protection against sea-level rise than the constructed marsh.
b. Potentially fewer integration issues with lots 1 and 2a.
c. In the near term this solution appears to avoid the need for VMRC and Army Corps approval.
d. The upper 1:2 slope may present challenges to stabilize and vegetate the bank, particularly given the sand substrate once the protective layer is removed.
e. Maintenance of the slope may be challenging given its steepness and that the base of the revetment will be under water most of the time.
f. All trees plus other vegetation will be removed from the slope exposing the top of the slope to northerly winds.
g. It should be noted that the designation of MLW occurs every 19 years. The current designation expires in 2020. The new designation could impact the viability of a future revetment design and move it into SAV territory.

The above does not consider the cost of each alternative.

Recommendation:
From an environmental perspective the living shoreline is preferred. However, considering a more complex approval process, vulnerability of the access road and rising sea levels, the revetment may provide more long-term protection for the road and a more certain approval process. The key concern is the stability of the slope after vegetation removal. This needs to be assessed and managed carefully in the short and long-term.

Please note – All of the above is based on assumptions and incomplete data. All this information should be independently derived and/or confirmed by a qualified engineering design group before deciding to proceed with any installation. In particular before disturbing the slopes, soil borings and tests should be made by qualified soil engineers to determine the near- and long-term consequences of removing the current vegetation.

Evaluation of Lot 7
Considering some of the particular aspects of lot 7. The request for evaluation of the HOA lot was made by the board of the HOA concerned about possible shoreline erosion, upland runoff and a desire to maintain the property as a natural area. The subject property is about +/-0.5acre with a steep bank, sandy shoreline and narrow beach. The immediate water depth is shallow with a sandy bottom (observed at shoreline and mapped bathymetry (Ref 3)). The property shoreline faces north east with a moderate fetch of 0.6 miles.

Upland:
This small property has several upland features. From east to west, it starts with a steep bank close to the shoreline similar to the other two neighboring properties (Photo 3). The bank then recedes away from the road and the shoreline with a high forested area giving way to a low and level area along the shore. The eastern portion of which is wet although not marshy and the western portion slightly higher is dry (Photo 4). All areas are forested and the western portion may be retained as natural habitat.

Banks:
The bank descends steeply from the narrow upland strip along the road to the shoreline on the eastern end and the level area on the western end. In general, the upland slopes are forested with a mixture of pines and hardwoods with several old mature trees. There is tree fall along the shoreline going back several years (Photo 5). The bank does not exhibit many signs of erosion except tidal undercutting at the eastern end. In general, the bank is in good shape.

Tidal/Intertidal Area:
The actual shoreline is a sandy beach 10 to 15 feet wide at low tide terminating at the foot of the bank at the eastern end (Photo 3). At the more open western end, there are shoreline grasses (*Spartina alterniflora*) and shrubs (saltbush) above the beach primarily due to sunlight access (Photo 6). Above the shoreline vegetation is a mixed hardwood forest.

Neighboring lots:
The shoreline lot to the east is the Ryan property, lots 5a & 6a, also part of this evaluation project. The shoreline lot to the west is a homeowner's property directly on the waterfront and was not evaluated.

VIMS/CCRM Recommendations for lot 7:
Considering this property's shoreline erosion issues alone, the shoreline has been considered in two sections:

1. For the eastern shoreline with steep bank, the VIMS CCRM decision tree (Attach 3) recommendation for forested shorelines with eroded shoreline and banks up to 30 feet is to manage the forest to prevent tree falls and address the shoreline erosion. For a moderate fetch, the

recommended shoreline erosion protection is a marsh with sill. See discussion above regarding living shoreline installation.

Given the potential approval hurdles because of the offshore SAV designation and if neighboring properties elect to install a revetment, it may be appropriate to install a revetment at the eastern end of lot 7 to facilitate approval and integration.

2. For the western beach with marsh and low erosion, the VIMS CCRM Decision Tree (Attach 3) recommendation is to manage the marsh and upland riparian buffer.

Additional Recommendations for lot 7:
In addition to the CCRM decision tree recommendations, the following are suggested for this individual property:

3. If a living shoreline is selected, because of the sensitivity of the forested bank, it should not be disturbed during construction. Access from the water is recommended.

4. If a living shoreline is selected or sections of the bank are not subject to revetment installation, manage the forested bank to prevent tree fall. Selectively remove dead, dying and severely leaning trees. Prune branches with weight bearing load over the water. Also, prune to increase the sunlight on the shoreline to promote growth of shoreline grasses. Note, tree removal will require a permit from the county.

5. Replace any removed trees with mid-story trees, native shrubs and deep-rooted grasses utilizing species that are already growing on the bank. Native grasses such as switchgrass, shrubs such as wax myrtle, mountain laurel and lowbush blueberry are preferred options to stabilize a slope. In particular because they have extensive root systems. Control establishment of invasive species. Reference the SEP Homeowners' Guide appendices (Attach 1) for suggestions in each category, and listings of native plant suppliers

6. On the western shoreline, prune overhanging trees to improve sunlight on the shore and allow establishment of new and spread of existing grasses.

7. Clean up the existing marsh and upland by removing deadfall and rubbish. Deadfall in a marsh can kill grasses and result in erosion caused by eddy currents around obstacles during regular tidal flow.

8. In light of recent increases in rainfall amounts in storms, upland erosion from storm water runoff is a concern. Existing vegetation should be maintained except for leaning trees. It is recommended that all storm water runoff from the road should be diverted away from the shoreline bank.

9. Restoring the shoreline and managing the forest will sustain the natural habitat. If a revetment is built, access to the western shoreline will need a new access.

10. Before proceeding with any shoreline erosion project, it is recommended to request an engineering assessment from Virginia's Shoreline Erosion Advisory Service, or SEAS, associated with the Department of Conservation and Recreation (DCR). Contact Mike Vanlandingham at 804 443-1494. This service is free.

Soil sample/nutrient management plan:
During our visit, we collected a soil sample. You will receive the analysis and a copy will be sent to Sam Johnson, retired Northern Neck Soil and Water Conservation District (NNSWCD) specialist for the preparation of Nutrient Management Plans. When that report is finished, we will forward it to you. The report will contain nutrient recommendations appropriate to your site should you decide to fertilize. Because excess fertilizer use contributes to nutrient loading that pollutes the bay, it is particularly important to use it with care. Should you have questions about the report, contact Sam Johnson through the Northern Neck Soil &Water Conservation District (804-333-9102) or directly at 804-333-4698.

Conclusion:
The above recommendations are made in our capacity as Extension Master Gardener Water Stewards and indicate our considered best solutions in terms of effectiveness. The suggestions should not be considered as binding you to any particular course of action. Our examination of the site or this report does not constitute permission by local or state government agencies to proceed with implementation of control measures. Permits from State and Federal agencies are generally required for shoreline modification.

You should also be aware that success in shoreline erosion control cannot be guaranteed, as there are many variables involved. Should you decide to go forward with a project involving any type of construction, we suggest care in selecting a contractor with experience in erosion control methods. If you do decide to construct a control measure, an assessment of the impacts of the project on the environment will be made by the regulatory agencies. The permit reviewing agencies may require additional information.

The goal of the Shoreline Evaluation Program is to help homeowners establish an erosion control plan specific to their property. In order to improve our service, we plan to contact you at some point in the fall of 2021 or if you request, sooner to follow up on our recommendations. If you have any questions, please let us know.

Attachments:
Attach 1: Northern Neck Master Gardeners Shoreline Evaluation Homeowner's Guide to Shoreline Management.
Attach 2: Map of Corrotoman by the Bay Development
Attach 3: VIMS-CCRM Decision Tree for Undefended Shorelines.
Attach 4: Google Earth Subject Peninsula Aerial View with Fetch
Attach 5: Sketch of Suggested Living Shoreline Profile Including Transition to the Bank.
Attach 6: Royer & Hamer Residences – Shoreline Improvements – Bay Design Group Aug 8, 2019

References:
Ref 1: VIMS-CCRM Lancaster County Comprehensive Coastal Resource Management Portal – Comprehensive Map Viewer - cmap2.vims.edu/CCRMP/Lancaster2015/Lancaster_CCRMP_Viewer.html
Ref 2: Living Shoreline Design Guidelines for Shore Protection in Virginia's Estuarine Environments Version 2.0 by Hardaway, Milligan, Wilcox and Duhring, 2017
Ref 3: VIMS Sea-level Rise Report Card, Feb 2019

Trent Jones
Extension Agent, VCE

Template revised 03/2018

Attach 4: Peninsula Aerial View with Fetch

Photo 1. Development Road and Top of Evaluated Properties Shoreline Bank. Note runoff rills.

Photo 2. Lot 3a & 4a Upper Slope erosion and loss of Protective Veneer and Vegetation.

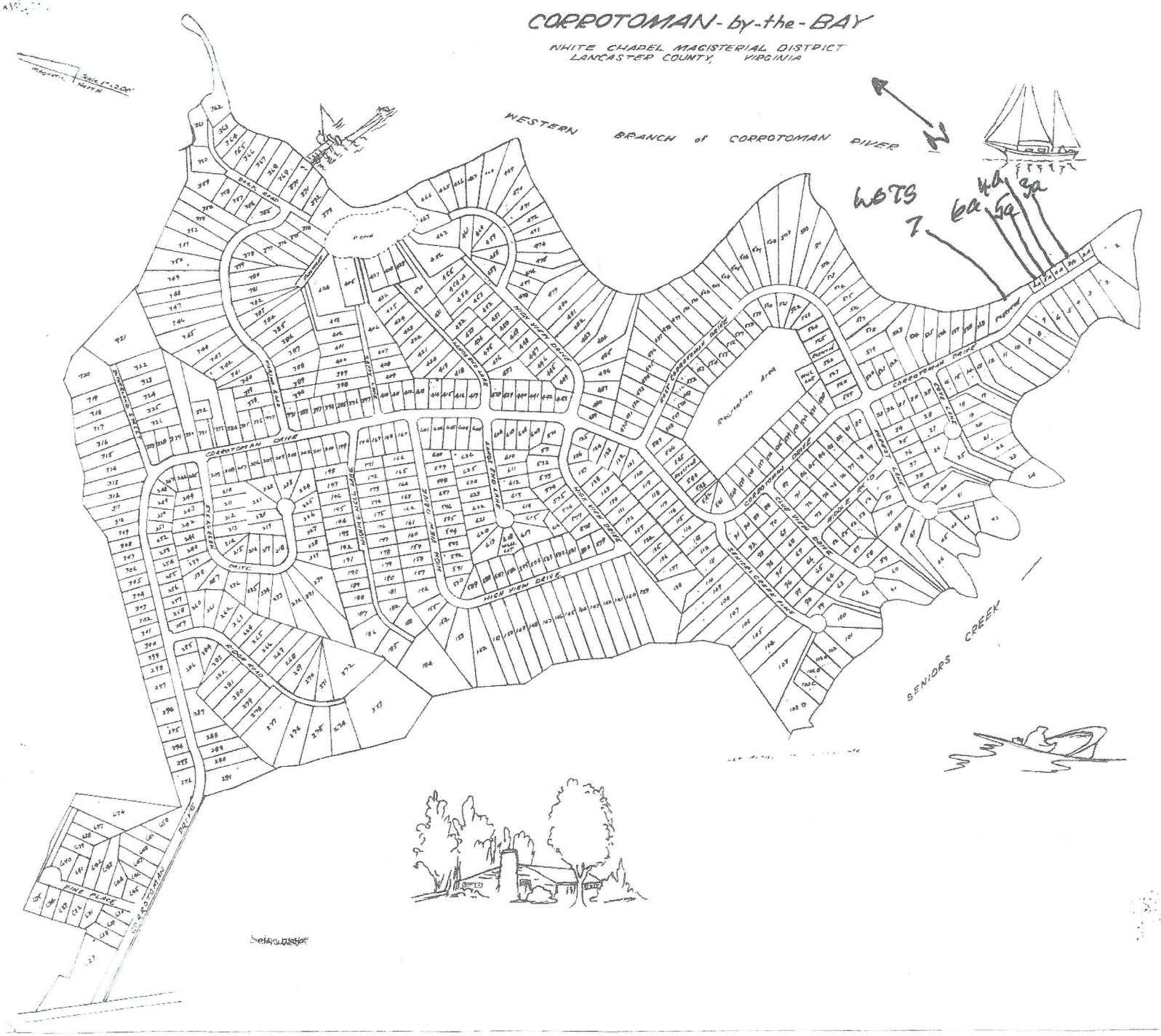
Photo 3: HOA Lot 7, Shoreline and Steep Bank with undercutting at Eastern End

Photo 4. Level portion of HOA lot 7

Photo 5. Beach and Tree Fall on HOA Lot 7

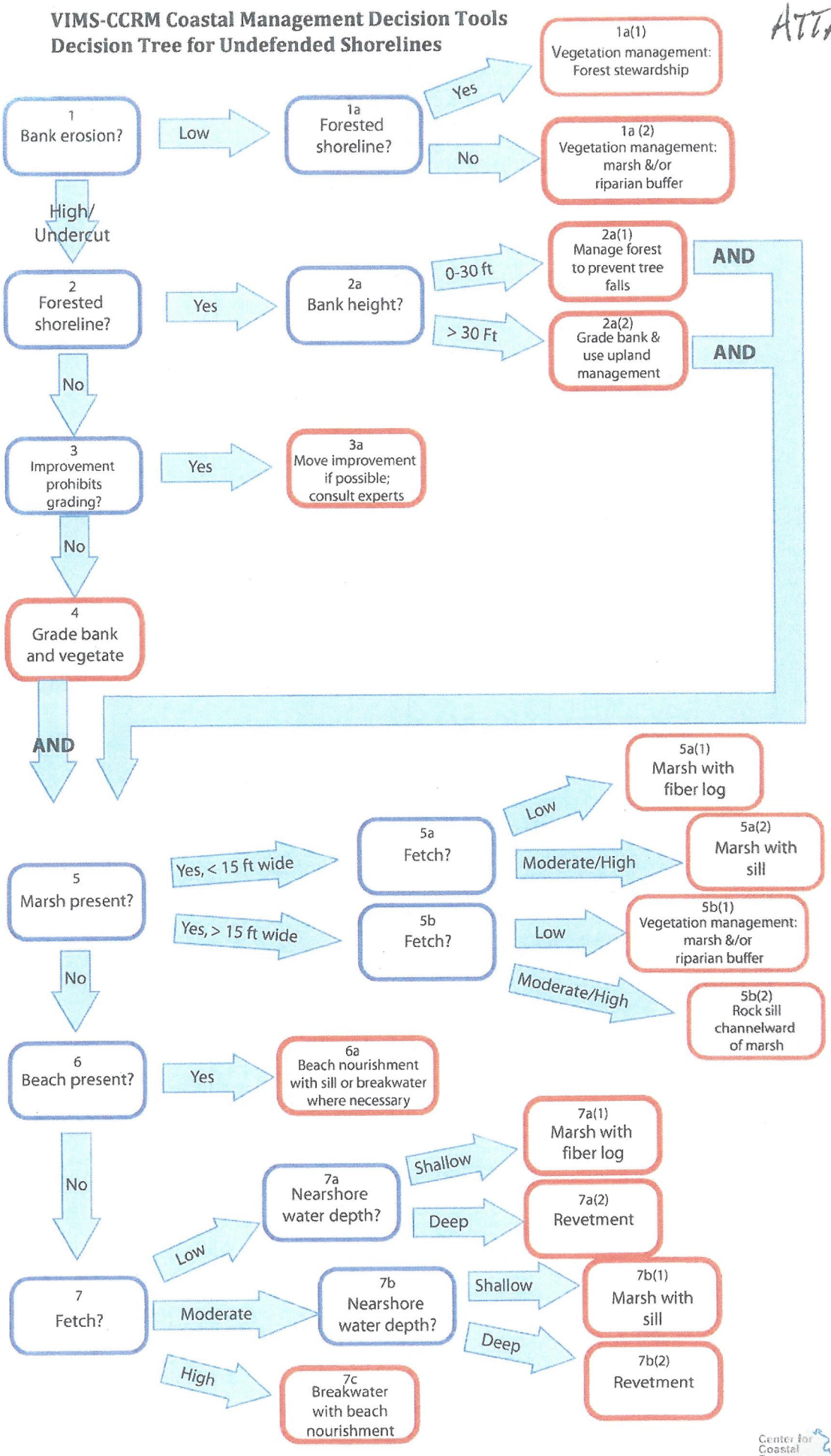
Photo 6. Western end Shoreline, HOA Lot 7

ATTACH 2.
1/1


CORROTOMAN-by-the-BAY
WHITE CHAPEL MAGISTERIAL DISTRICT
LANCASTER COUNTY, VIRGINIA
WESTERN BRANCH of CORROTOMAN RIVER
N
LOTS
7
6a
4a
5a
3a
PENINSULA AREA SUBJECT PROPERTIES
Recreation Area
CORROTOMAN DRIVE
HIGH VIEW DRIVE
PINE PLACE
SENIORS CREEK

ATTACH 3
1/2

VIMS-CCRM Coastal Management Decision Tools
Decision Tree for Undefended Shorelines

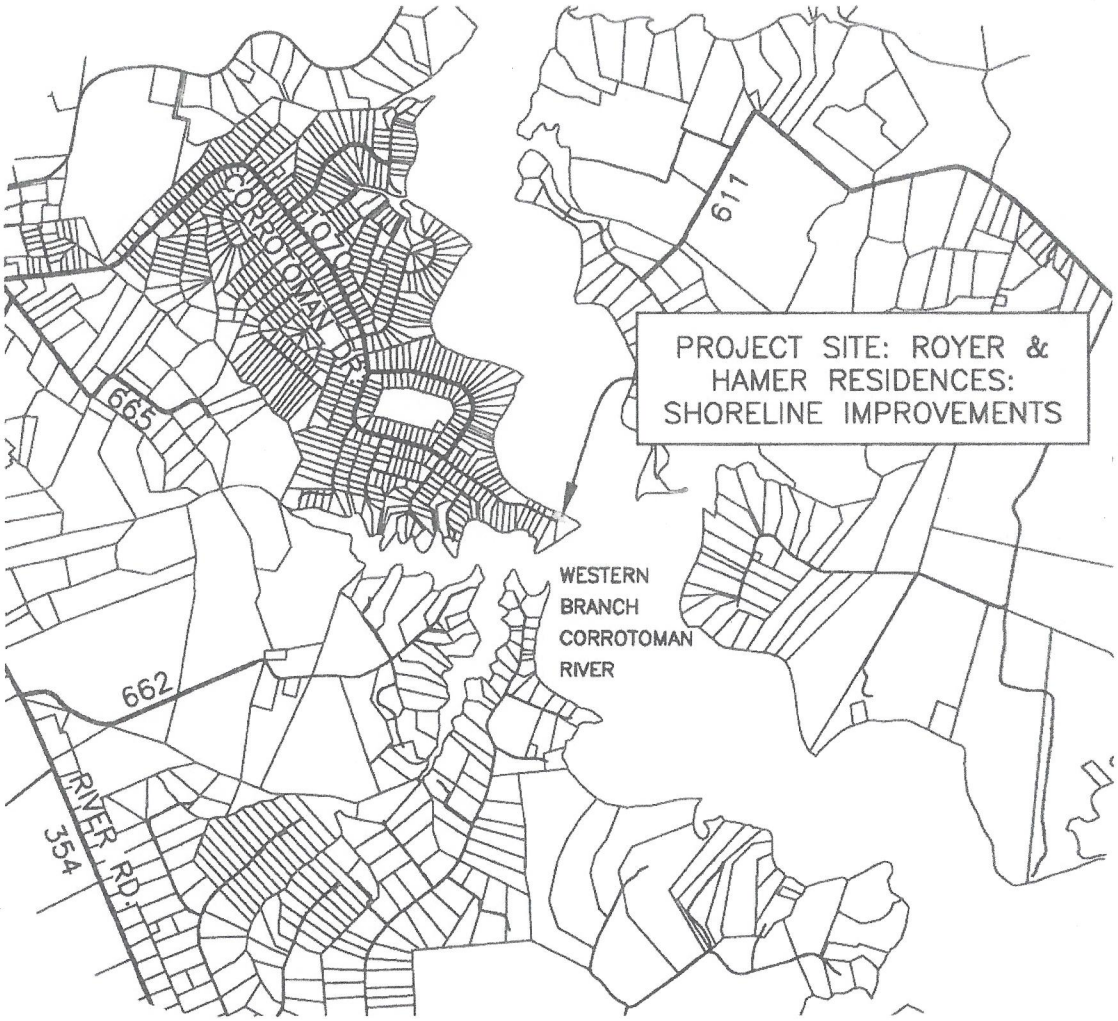


Center for Coastal Resources Management
Virginia Institute of Marine Science

Bank Erosion	The loss of upland soil along a shoreline due to the action of water, ice or wind. Indicators of erosion include bare soil areas, leaning and fallen trees, exposed tree roots, dead tree stumps in the water, and bank slumping.
Bank Erosion - High	Evidence of active soil movement, including bare exposed soil areas, numerous leaning and fallen trees, dead tree stumps in the water and/or bank slumping.
Bank Erosion - Low	No evidence of active soil movement, indicated by dense wetland and/or upland vegetation, trees growing straight up, trees of different ages, multiple layers of vegetation (canopy, mid-story, groundcover) and a relative absence of exposed soil areas.
Bank Erosion - Undercut	Loss of soil only at bank toe due to tidal action or water currents.
Bank Height	Approximate vertical height of the upland bank.
Beach	Shoreline type dominated by loose, unconsolidated sand
Beach nourishment	Placement of good quality sand along a beach shoreline to increase the beach width and raise the elevation of the nearshore area
Fetch	The distance across open water over which wind blows and waves are generated. This distance is measured at all angles from the shoreline. For the purposes of the decision tree, use the longest distance. **Low**: 0 – ½ mile; **Moderate**: between ½ - 2 miles; **High**: greater than 2 miles
Fiber log	Manufactured, biodegradable log that provides temporary erosion and sediment control and provides a medium for growing plants, particularly wetland and bank vegetation.
Forested Shoreline	Shoreline type dominated by mature canopy trees and other forest vegetation layers, such as mid-story trees, shrubs and ground cover.
Grade Bank	Reduce the steepness of a slope to allow for wave run-up and to improve vegetation growing conditions.
Marsh Present	Tidal wetland plants are growing along shoreline in parallel fringe or inland bays and tidal ponds (pocket marshes).
Marsh with fiber log	A treatment that uses fiber logs for temporary stabilization of a planted marsh area.
Marsh with sill	A low revetment placed near the mean low water elevation then backfilled with sand to create a tidal marsh where it does not occur naturally.
Nearshore water depth	The vertical distance between the water surface and the submerged bottom usually referenced in feet below the mean low water elevation (e.g. – 2 ft MLW) **Shallow**: at 30 ft. channelward from MLW, water depth is $\leq$ 3 ft. **Deep**: at 30 ft. channelward from MLW, water depth is > 3 ft.
Revetment	A sloped structure constructed with large, heavy stone or other material (riprap) placed against the upland bank for erosion protection. The size of a revetment is dictated by the wave height expected to strike the shoreline.
Rock sill channelward of marsh	A low revetment placed near the mean low water elevation adjacent to an existing tidal marsh.
Sill or Breakwater with beach nourishment	A structure usually built of rock positioned offshore to deflect the force of incoming waves and to contain a sand beach. Sill is generally of lower elevation & closer to shore. A breakwater is generally larger & further from shore.
Upland Management	Capture rainfall and runoff from impervious surfaces rather than allowing it to flow or be directed toward the waterway. Re-locate or elevate buildings that are routinely flooded or threatened by erosion.
Vegetation Management: Forest Stewardship	Enhance the existing forest condition by selectively removing dead, dying and severely leaning trees, pruning branches with weight bearing load over the water, planting mid-story and ground cover vegetation, controlling invasive upland species introduced by previous clearing.
Vegetation Management, Marsh &/or riparian buffer	Enhance the existing marsh condition by periodically removing excessive tidal debris and solid waste, repairing storm damaged areas, or adding new wetland vegetation. Enhance the existing riparian buffer condition by adding new trees, shrubs and ground covers; replace lawn with ornamental grasses, native shrubs and small trees.

ATTACH. 6

1/6

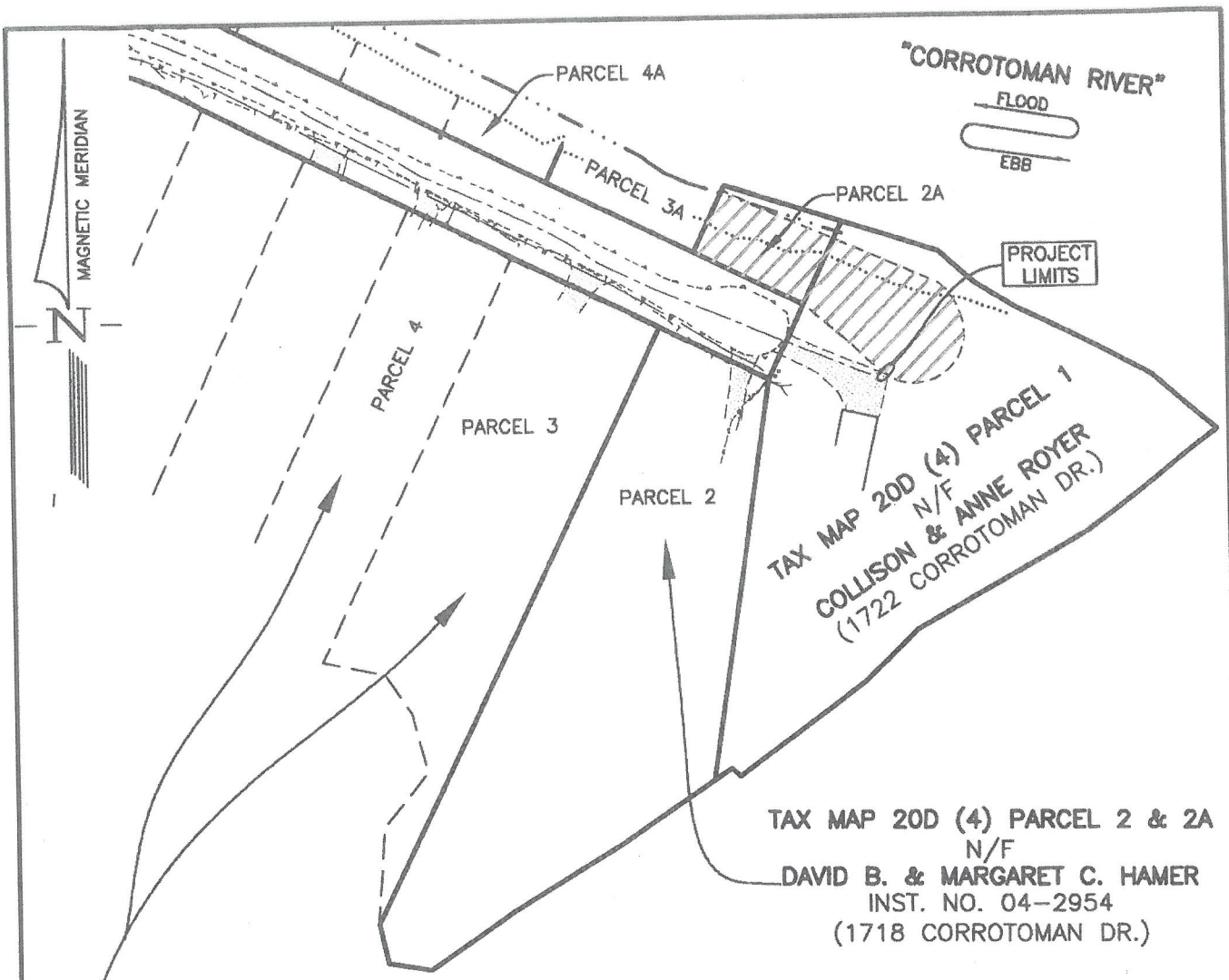


Scale: 1" = 2000'

VICINITY MAP
FOR
ROYER & HAMER RESIDENCES: SHORELINE IMPROVEMENTS
LOCATED AT
1718 & 1722 CORROTOMAN DR.
WHITE CHAPEL DISTRICT
LANCASTER COUNTY, VIRGINIA
AUGUST 8, 2019
SHEET D1 OF D6

DESIGN: WAS/BMW	
CAD: BMW	
CHECKED: WAS	
JN: 19103-01B	
FILED: 19103JPA	

BAY design group
Engineering Surveying & Land Planning
40 CROSS ST.
URBANNA, VA. 23175
804-693-2993
www.baydesigngroup.com



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Scale: 1" = 100'

OVERALL LAYOUT

FOR

ROYER & HAMER RESIDENCES: SHORELINE IMPROVEMENTS

LOCATED AT

1718 & 1722 CORROTOMAN DR.

WHITE CHAPEL DISTRICT
LANCASTER COUNTY, VIRGINIA
AUGUST 8, 2019
SHEET D2 OF D6

DESIGN: WAS/BMW	
CAD: BMW	
CHECKED: WAS	
JN: 19103-01B	
FILED: 19103JPA	

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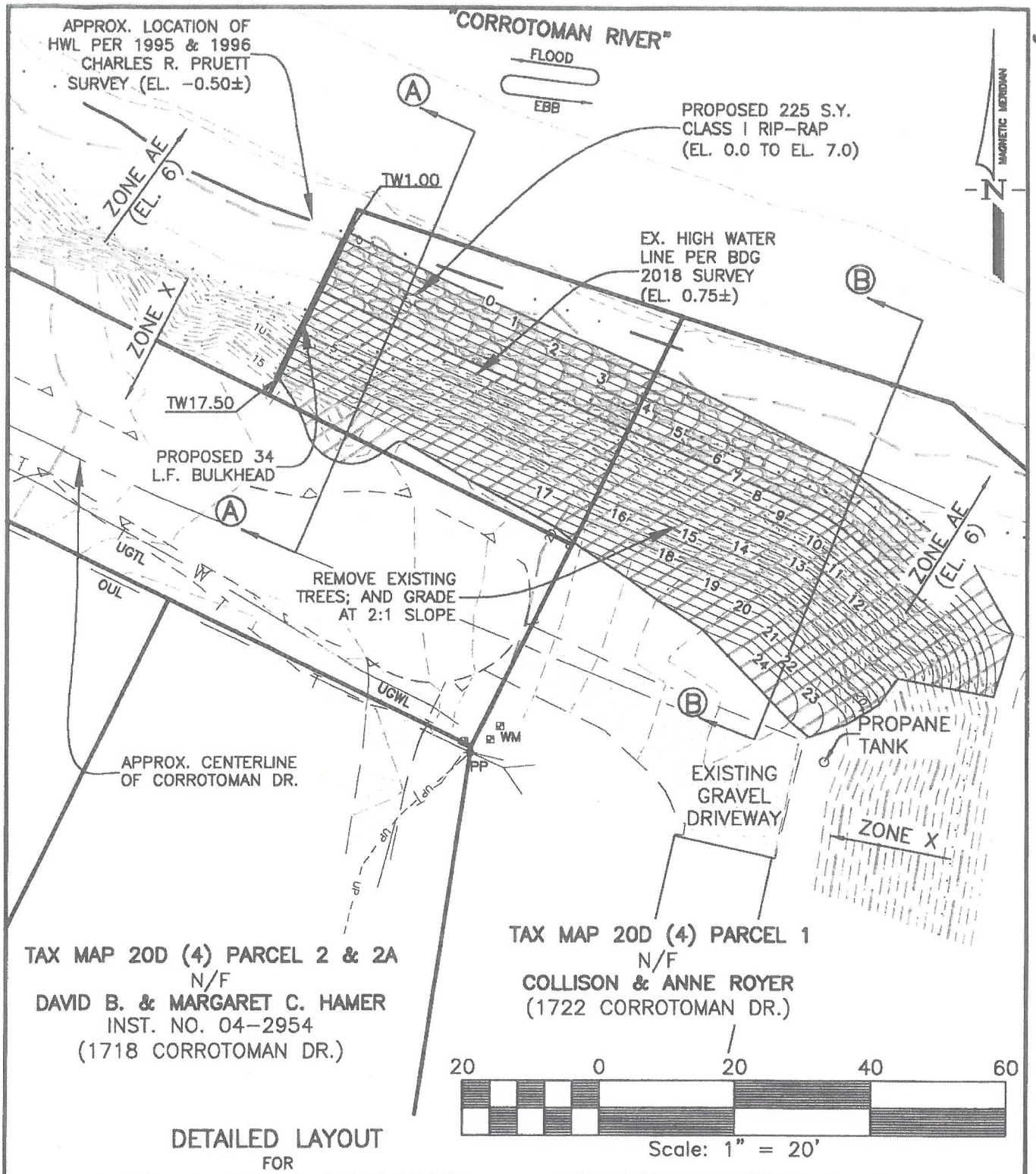

DETAILED LAYOUT
FOR
ROYER & HAMER RESIDENCES: SHORELINE IMPROVEMENTS
LOCATED AT
1718 & 1722 CORROTOMAN DR.
WHITE CHAPEL DISTRICT
LANCASTER COUNTY, VIRGINIA
AUGUST 8, 2019
SHEET D3 OF D6

DESIGN: WAS/BMW	
CAD: BMW	
CHECKED: WAS	
JN: 19103-01B	
FILED: 19103JPA	

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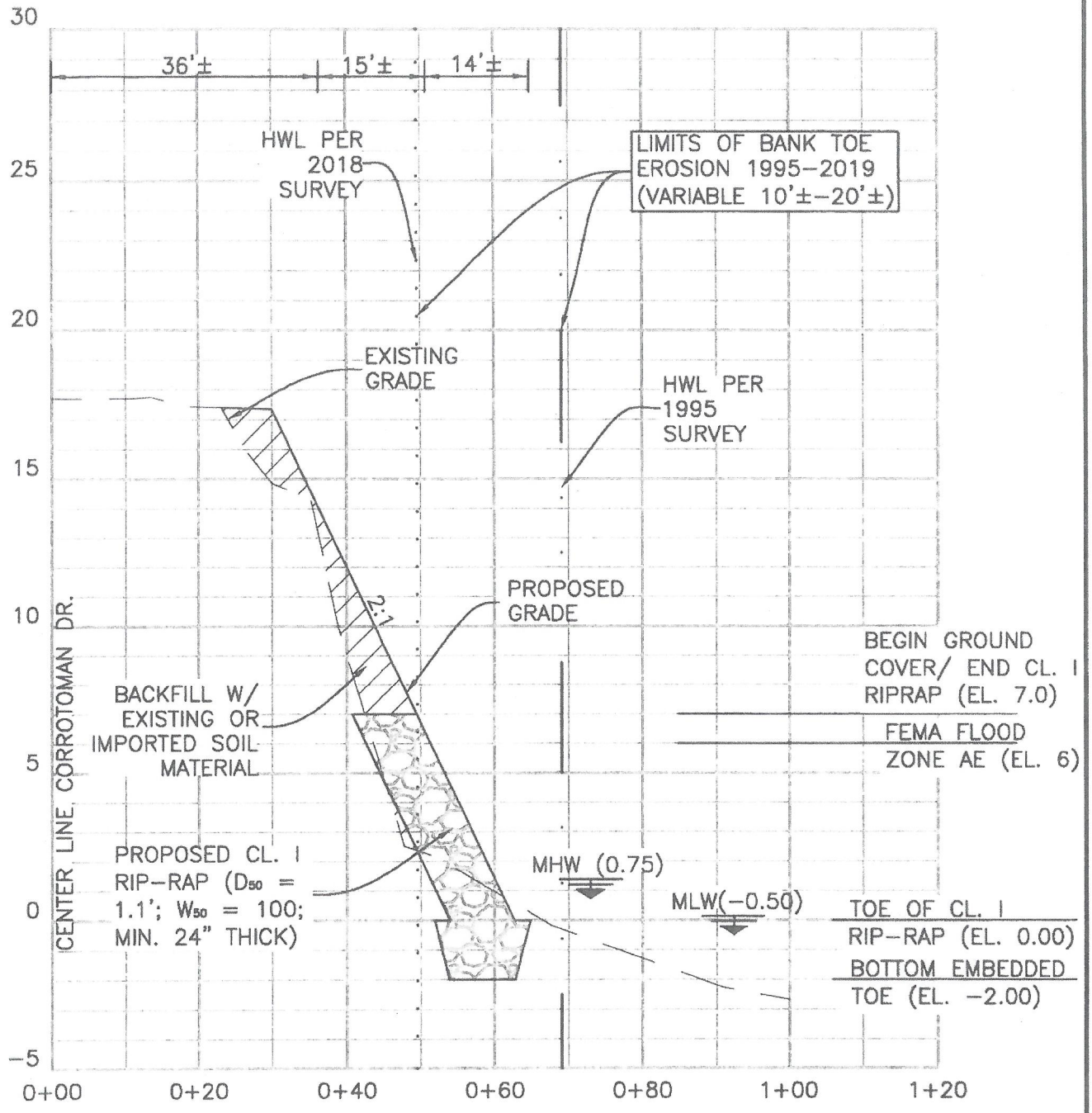
4/6



HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

SECTION A–A
FOR
ROYER & HAMER RESIDENCES: SHORELINE IMPROVEMENTS
LOCATED AT
1718 CORROTOMAN DR.
WHITE CHAPEL DISTRICT
LANCASTER COUNTY, VIRGINIA
AUGUST 8, 2019
SHEET D4 OF D6

DESIGN: WAS/BMW	
CAD: BMW	
CHECKED: WAS	
JN: 19103–01B	
FILED: 19103JPA	

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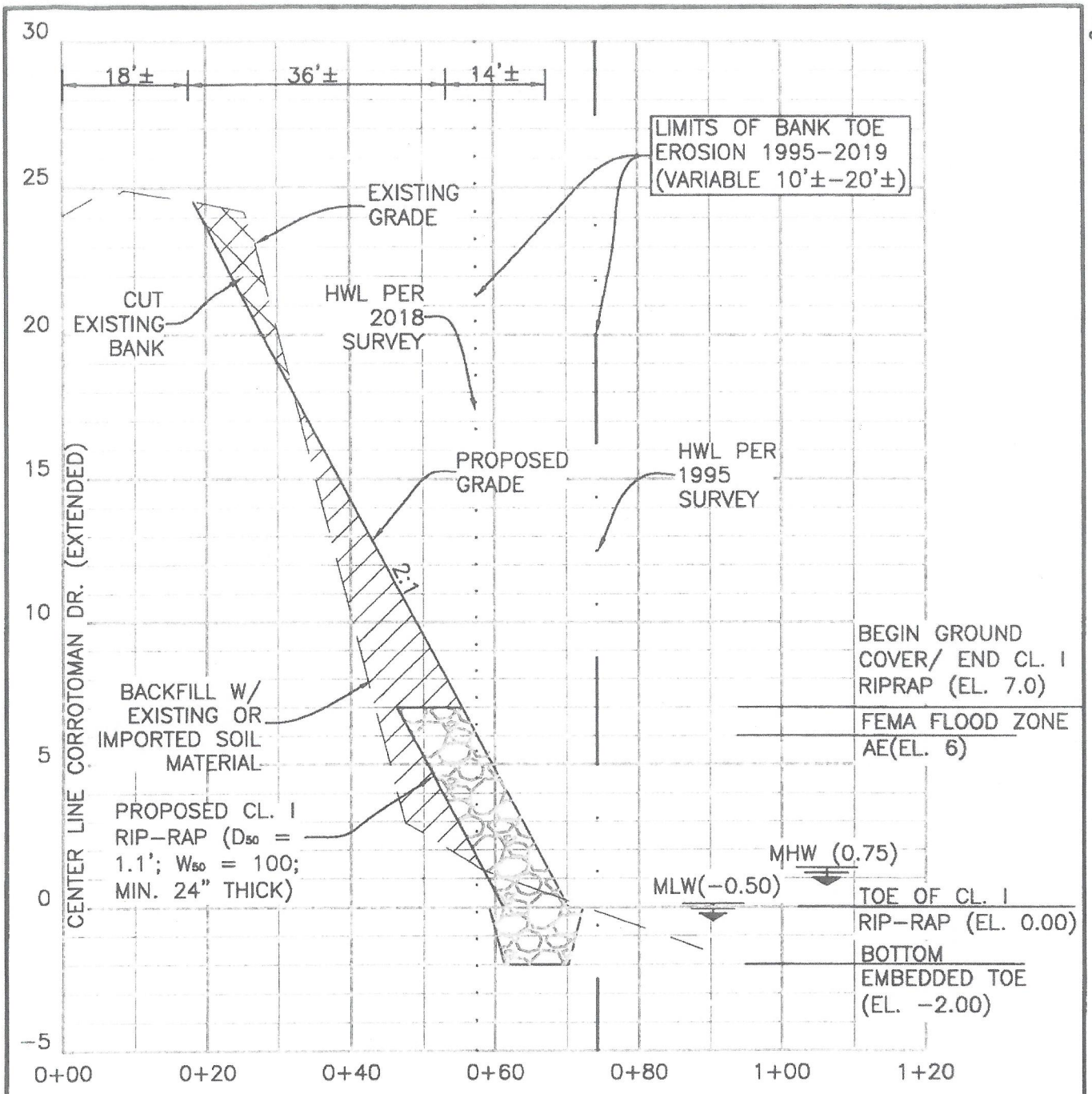

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'

SECTION B−B
FOR
ROYER & HAMER RESIDENCES: SHORELINE IMPROVEMENTS
LOCATED AT
1722 CORROTOMAN DR.
WHITE CHAPEL DISTRICT
LANCASTER COUNTY, VIRGINIA
AUGUST 8, 2019
SHEET D5 OF D6

DESIGN: WAS/BMW	
CAD: BMW	
CHECKED: WAS	
JN: 19103−01B	
FILED: 19103JPA	

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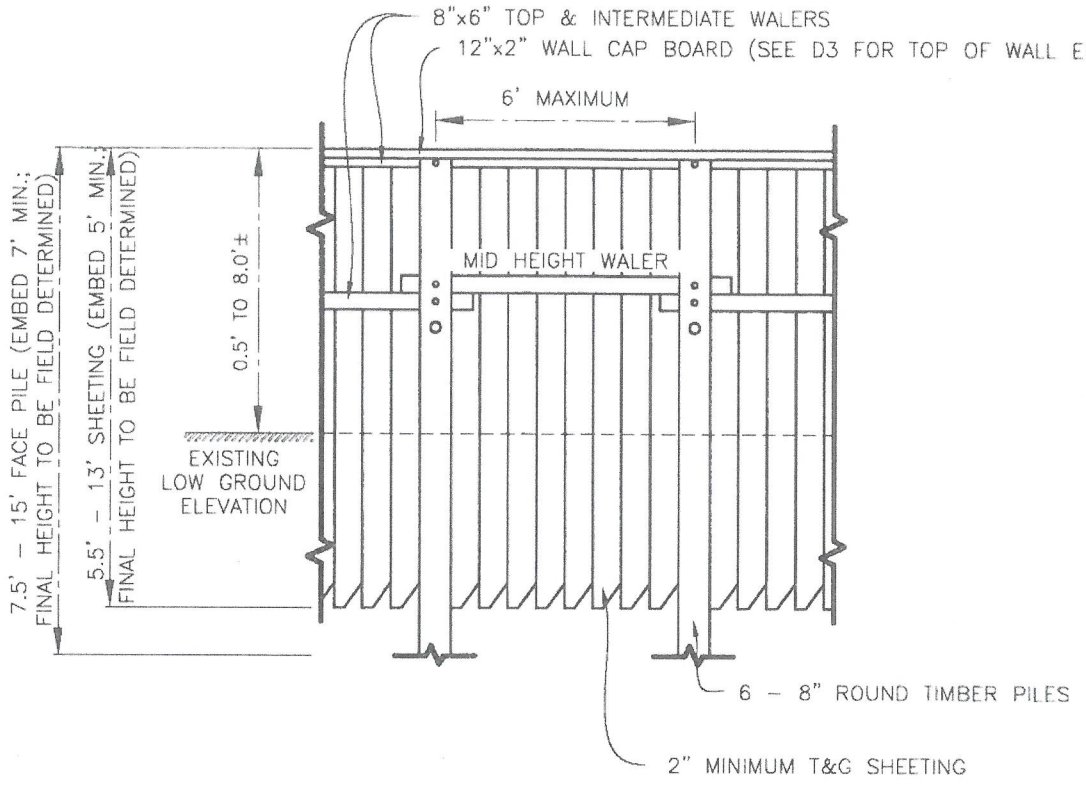


CONSTRUCTION NOTES:

1. ALL TIMBER SHALL BE MARINE GRADE SOUTHERN PINE. PRESERVATIVE TREATMENT TO MEET AMERICAN WOOD–PRESERVERS' ASSOCIATION (AWPA) STANDARDS C–2 AND C–18.
2. ALL FACE AND ANCHOR PILES SHALL BE TIP DIAMETER SPECIFIED WITH PRESERVATIVE TREATMENT TO AWPA STANDARD C–3 AND C–18.
3. TIMBER SHEETING SHALL BE MARINE GRADE TONGUE–AND–GROOVE.
4. ALL FASTENERS AND TIE RODS SHOULD BE HOT DIPPED GALVANIZED.
5. BACKFILL SHOULD BE A FREE DRAINING, CLEAN, GRANULAR (SAND OR SANDY CLAY) MATERIALS.

BULKHEAD DETAIL
ROYER & HAMER RESIDENCES: SHORELINE IMPROVEMENTS

LOCATED AT

1718 & 1722 CORROTOMAN DR.

WHITE CHAPEL DISTRICT
LANCASTER COUNTY, VIRGINIA
AUGUST 8, 2019
SHEET D6 OF D6

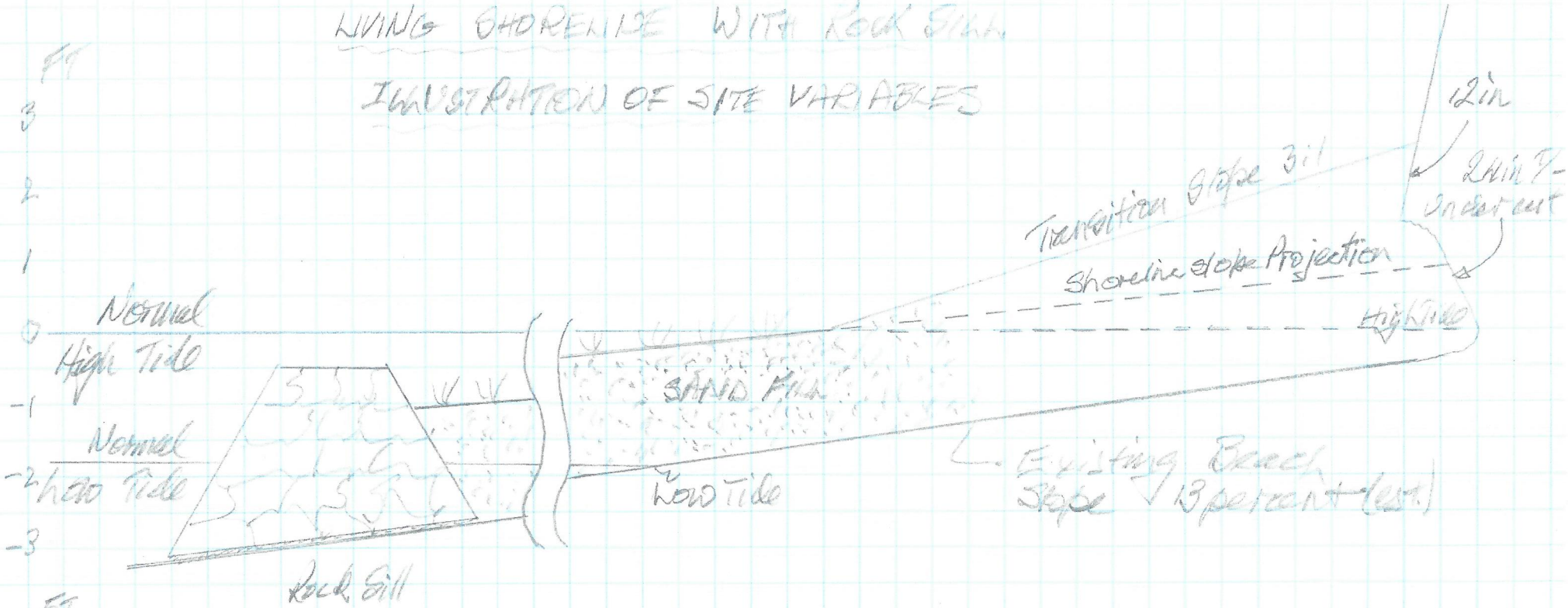
DESIGN: WAS/BMW	
CAD: BMW	
CHECKED: WAS	
JN: 19103–01B	
FILED: 19103JPA	

BAY design group
Engineering Surveying & Land Planning
40 CROSS ST.
URBANNA, VA. 23175
804–693–2993
www.baydesigngroup.com

ATTACH 5. 1/1

LIVING SHORELINE WITH ROCK SILL

ILLUSTRATION OF SITE VARIABLES



FT. 20 19 18 11 10 9 8 7 6 5 4 3 2 1 0

E 11/11/19

Northern Neck Master Gardeners
Shoreline Evaluation Program Registration

Please complete this registration form and questionnaire and mail to:

Northern Neck Master Gardeners
Shoreline Evaluation Program
PO Box 62
Heathsville, VA 22473

SEP volunteers will schedule an on-site evaluation of your shoreline and collect a soil sample. You will receive written recommendations for your shoreline and educational materials. Also, the Virginia Soil and Water Conservation District will provide a nutrient management plan based on the result of your soil test.

Name: Corrotoman By the Bay Association

Address P.O. Box 99 City: Mollusk Zip 22517

Phone: 540) 446-1770 E-mail: deb@beutel.us

Best time to call to schedule an assessment: soon as possible

☒ *Please check if you agree to a follow-up visit during the12 months after the evaluation so that we may obtain your feedback and determine whether the report and the recommendations were of value to you.*

Please enclose a check for $60, an all-inclusive fee, made payable to NNMG.

Office Use Only

Received: 8/7/19 Date of Visit: _____ Check #: 8974 Amount: $180.00

Master Gardeners SEP Team: _____ and _____

Recommendations provided: _____
(date)

Northern Neck Master Gardeners
PO Box 62, Heathsville, VA 22473
Virginia Cooperative Extension Phone: (804) 462-5780
Email: SHORELINE.NNMG@gmail.com – http://ShorelineNNMG.weebly.com

Revised 12/18

Northern Neck Master Gardeners
Shoreline Evaluation Program
Questionnaire

Please complete this questionnaire **as best as you can** and return it to the Northern Neck Master Gardeners with the Registration form and your payment. Do not worry if you do not have all the information, just try and give us as complete a picture of your property as possible.

If possible, please attach photographs of the base of your bank taken at low tide.

Name: Corrotoman By the Bay Association

Address of Property: LOT 7

County: Lancaster **Body of water:** Corrotoman River

Is this a part time home? No ✓ Yes ___

If yes, what is your preferred mailing address?

P.O. Box 99 City: Mollusk Zip: 22517

Length of property ownership? 52 years. Size of property? _____ acres

How far is your house from the mean high-tide line? _____feet

Briefly describe your shoreline concerns:

Shoreline Questions:

Has your shoreline noticeably receded during the past two years? No ✓ Yes ___

Is your shoreline vulnerable to storms? No ___ Yes ✓

Do you have frequent, seasonal boat traffic? No ___ Yes ✓

What is your shoreline measurement in feet? _____

Which direction does your shoreline face (circle all that apply): (N) S W E

Please list the type of vegetation present on your shoreline.

✓ mature canopy trees	✓ mid-story trees	✓ shrubs
✓ ground covers	✓ marsh grass	___ turf
___ other (please describe)		

- more -

Have you or previous owners implemented remedies for problems on your shoreline? (Check all that apply and indicate whether or not they are still serviceable.)

A.____ Bulkhead: (a sea wall designed to prevent overtopping, flooding, or sliding of the land
B.____ Riprap
C. ____ Groins/jetties
D. ____ Marsh toe sill/stabilization

Do your neighbors have any of the above? (please circle all that apply)

Neighbor to the right when facing the water. A B C D

Neighbor to the left when facing the water. A B C D

Bank Conditions:

Is the height of your bank uniform? No ✓ Yes _____ If yes: Height _____feet

If not uniform, what is the highest measurement _____, the lowest _____

Upland Conditions:

Does your land slope down to the bank/shoreline? No____ Yes ____

Do you have gullies or channels that run down to the shoreline? No____ Yes ____

Are there gutters on your house or on other structures? No✓ Yes ____

If yes, do they empty into or onto:

_____ splash blocks
_____ dry well/s
_____ rain barrels
_____ none of the above

What percentage of your property is lawn (make a guess)? _____

What is the ultimate goal for your shoreline? (circle all that apply)

(A) Shoreline protection
(B) Shoreline restoration
C. Storm water management
(D) Habitat development or enhancement
E. Improved water quality
F. Other

How did you hear about this program?
Rappahanock Record

What outcomes are you expecting from a visit from the Master Gardeners?
Better Understanding of shoreline Management Practices & Recommendations to address any identified risks or concerns