WETLANDS AND WATERWAYS PROGRAM
TIDAL WETLANDS APPLICATION GUIDELINES

PROPOSED LIVING SHORELINE PROJECT - SUPPLEMENTAL CHECKLIST

Checklists outline additional information that may be required for the proposed project based on the project and/or the applicant's project site. Applicants are encouraged to schedule a pre-application meeting to answer questions, discuss the applicant's site, discuss the proposed project, and determine if any additional information/plan sheets are required due to the uniqueness of the applicant's site.

For minimum requirements for all living shoreline applications, please see Tidal Wetland Application Guidelines for Living Shorelines.

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PURPOSE AND NEED

Checklist outlines supplemental information that may be required for a proposed living shoreline. Additional information may be required based on the project and/or the applicant's project site but not required for all applications (see Additional Information That May Be Requested).

ADDITIONAL INFORMATION THAT MAY BE REQUESTED

- Provide detailed explanation of avoidance and minimization of impacts to resources such as SAV beds and open water. If filling areas colonized by SAV in the last five years is proposed, provide a detailed justification for why proposed impacts are unavoidable and minimized to the maximum extent practicable to achieve water-dependent project goals.
    - Does the proposed project meet COMAR's definition of a "nonstructural shoreline erosion control measure" (COMAR 26.24.01.02.B.(35-1))? Is the living shoreline dominated by tidal wetland vegetation?
    - Does the proposed project meet the goals of the Living Shoreline Protection Act of 2008? In addition to controlling shoreline erosion, will the proposed project trap sediment, filter pollution, and provide aquatic and terrestrial habitat?
- Demonstrate the need for shoreline stabilization. This could include site photographs documenting ongoing erosion. If erosion is occurring, what is/are the source(s) of erosion, rates of erosion, and how will this project address those sources?
    - Possible Source of Information on erosion rates:
        - MD DNR - The Coastal Atlas
- If shoreline presents existing stabilization structures (e.g., bulkhead) provide details regarding structure age, construction method (e.g., fill, excavation), and current condition. If existing structures are to remain and/or if no landward grading is proposed, provide water-dependent justification for this approach.
- If the existing shoreline is natural, provide details regarding sources of erosion and how will this project address those sources. If hardened structures (e.g., stone sills) are proposed to protect this shoreline, provide justification for their construction and design (i.e., size, height) in lieu of natural shoreline or a softer shoreline (e.g., coir log) approach.
- If the proposed living shoreline will be utilized for Chesapeake Bay TMDL goals or to achieve Municipal Separate Storm Sewer System (MS4) targets, refer to page 12.

SUBMERGED AQUATIC VEGETATION

Checklist outlines supplemental information that may be required for **a proposed living shoreline that is within or adjacent to (i.e., within 50 feet) a submerged aquatic vegetation (SAV) bed**. Information below may be required for projects with impacts to submerged aquatic vegetation and/or projects that require a Wetlands License. Additional information may be required based on the project and/or the applicant's project site but not required for all applications (see Additional Information That May Be Requested). When impacting SAV, considerations should be taken to minimize high marsh plantings, maximize low marsh plantings and open water areas, replace impacted SAV area with an equivalent area of marsh plantings, and consider landward placement of the living shoreline to minimize channelward extent.

EXISTING AND PROPOSED CONDITIONS PLAN SHEET(S)

- Plan view should include an outline of SAV offshore of the applicant's property and adjacent riparian properties.
    - Outline of SAV should depict the last five years of available SAV mapping from the Virginia Institute of Marine Sciences (VIMS). VIMS SAV Interactive Map can be found at: VIMS - SAV Interactive Map. Delineation data can be found at: VIMS - SAV Reports and Data
    - If the applicant has conducted a ground-truthed SAV survey, the survey boundary outline should also include an overlay on plan view containing all VIMS SAV mapping data. Observed SAV species should be noted on the plan, if applicable. Information on SAV species identification can be found at: Eyes on the Bay - Submerged Aquatic Vegetation (SAV) Identification Key.
- Proposed Conditions plan view should quantify the area of impact (square feet) to SAV within the proposed project footprint.

ADDITIONAL INFORMATION THAT MAY BE REQUESTED

- Plan view should note the year(s) that SAV was mapped, species observed (if available), and the density of the bed(s) for each year that SAV was mapped offshore of the applicant's property and adjacent riparian properties. Information on density and SAV species can be found on the VIMS SAV Interactive Map.
- Has the project's watershed met or exceeded the SAV restoration goals of the Chesapeake Bay Watershed Agreement in the past five years?
    - Sources for this information include:
        - Chesapeake Bay Program - SAV Fact Sheets
        - VIMS - SAV Area by Segment
        - Eyes on the Bay - Bay Grass Coverage and Habitat Status
        - Chesapeake Progress - Submerged Aquatic Vegetation (SAV)
- How does the proposed living shoreline provide ecological uplift that could offset the loss of SAV? Provide quantitative and/or qualitative information of the functional uplift expected from the project based on approved ecological assessment methods or applicable research.
- Will impacts to SAV be temporary or permanent? If impacts are temporary, provide supporting documentation explaining why SAV is expected to recolonize the impacted area. This should include an examination of grain size, water velocities, and depths present under proposed conditions and a relative comparison to existing conditions that support SAV.
- Provide a narrative that explains how low marsh vegetation has been maximized in the design plans.

- Provide a narrative that explains how the filling of existing open water has been minimized in the design plans and open water areas have been maximized in the design plans.
- Provide a narrative that explains how the creation of open water features (e.g., incorporation of a tidal gut through a living shoreline) has been maximized in the design plans, if applicable.
- To minimize impacts to existing aquatic resources or to minimize channelward extent, can the project be moved landward into the uplands?
- The Department prefers a 1:1 ratio of high marsh to low marsh plantings, but site conditions, such as SAV, may require a higher ratio of low marsh plantings. Justify if site conditions would prevent the planting of a higher ratio of low marsh plantings.
- The Department prefers the replacement of the area of impacted SAV with an equivalent area of marsh plantings. Justify if site conditions would prevent the planting of an equivalent area of marsh plantings.

COASTAL RESILIENCY

Checklist outlines supplemental information that may be required for **a proposed living shoreline that is designed for coastal resiliency, sea level rise, and climate change.** Additional information may be required based on the project and/or the applicant's project site but not required for all applications (see Additional Information That May Be Requested).

GENERAL REQUIREMENTS

- Provide the predicted sea level rise elevation used for the project design. For a simple, pre-approved option, the 2050 'High Tolerance for Flood Risk' elevation found in the Guidance for Using Maryland's 2023 Sea Level Rise Predictions may be used. See Tables on Pg 7 for elevations at NOAA Tide Stations at various baseline elevations (NOAA Tidal Datum and Current Conditions (2025)).
    - Please note that the Guidance Document uses 2005 levels as the baseline elevation.
    - If an alternative predicted elevation is proposed, see Additional Information that May Be Requested below.
- Provide baseline elevation for MLW at 0.0 ft (e.g., referenced to NOAA Tide Station Epoch (1983 - 2001) or current conditions).
- Provide a detailed narrative explaining how the project has incorporated sea level rise / coastal resiliency into the proposed project design.
- Provide detailed justification of the proposed channelward extents of the project.
- Provide detailed justification for the proposed height of any stone containment structures.
- Provide information on recent or historic shoreline erosion at the site.
- Provide details regarding potential marsh migration areas in existing and/or proposed uplands and discuss how the proposed shoreline is reasonably anticipated to facilitate tidal wetland migration under predicted sea levels.
- Provide details regarding potential marsh migration areas in existing and/or proposed uplands and discuss how the proposed shoreline is reasonably anticipated to facilitate tidal wetland migration under predicted sea levels.
- The Department prefers a 1:1 ratio of high marsh to low marsh plantings, but site conditions, such as high-energy environments, may justify a higher ratio of high marsh plantings. Justify if site conditions would prevent the planting of a 1:1 ratio of high marsh to low marsh plantings.

PROPOSED CONDITIONS PLAN SHEET

- Plan view should clearly depict the area of low marsh plantings, the area of high marsh plantings, the area of upland plantings, the area of unplanted fill in existing jurisdictional tidal wetlands, the species of plant in each area, and the channelward extent.
    - The Upper Limit of Tidal Wetlands is the highest elevation of high marsh plantings above Mean Low Water (MLW) in 2050 and is calculated using the following method:

      Upper Limit of Tidal Wetlands = (1.5 x Mean Tidal Range) + predicted 2050 MLW elevation

Calculated elevation is added to baseline MLW at 0.0 ft. All plantings and fill above this elevation should be included in the area of upland plantings and/or unplanted fill in existing jurisdictional tidal wetlands (as applicable). The Upper Limit of Tidal Wetlands is only used for determining planting areas and not for jurisdictional determinations. **See Tables on Pg 7 for the elevation of the Upper Limit of Tidal Wetlands at various NOAA Tide Stations.**

ADDITIONAL INFORMATION THAT MAY BE REQUIRED

- Reference sites and examples that use similar design elements may be provided.
- If an alternative predicted sea level rise elevation is proposed that is not the 2050 High Risk Tolerance found in Guidance for Using Maryland's 2023 Sea Level Rise Predictions, then provide the predicted sea level rise elevation and the Risk Tolerance used for the project design, including the year, elevation, and the source of the alternative prediction. Additionally, provide a detailed justification for using the alternative prediction and Risk Tolerance.
    - Example: Use of the 2050 predicted elevation using Moderate Risk Tolerance instead of High Risk Tolerance.
- If proposing to plant tidal wetland vegetation in any fill other than sand (e.g rock/cobble containment structures/ headlands or shingle beach), provide the average diameter size of rock and cobble areas that will be planted.
    - Provide a breakdown of the quantity and average diameter of each type of proposed fill.

MDE Accepted Elevations for the Upper Limit of Tidal Wetlands in 2050

This is the highest planting elevation MDE will accept for high marsh vegetation for Coastal Resiliency projects. The Upper Limit of Tidal Wetlands (2050) elevations have been rounded. For step-by-step instructions for using the tables, see page 8, and for an illustration of how to add the Upper Limit of Tidal Wetlands to MLW, see page 10.

Predicted 2050 MLW Elevation + (1.5 x Mean Tidal Range) = Upper Limit of Tidal Wetlands in 2050

Baseline Elevation: NOAA Tidal Datum
All Elevations Referenced to MLW = 0.0 ft using NOAA Tidal Datum (Epoch 1983 - 2001)

NOAA Tide Station	2050 Predicted Elevation	1.5 x Mean Tidal Range (ft)	Upper Limit of Tidal Wetlands in 2050
Baltimore	1.44 ft	1.5 x 1.15 ft = 1.73 ft	3.2 ft
Annapolis	1.54 ft	1.5 x 1.00 ft = 1.50 ft	3.0 ft
Solomons	1.61 ft	1.5 x 1.17 ft = 1.76 ft	3.4 ft
Tolchester Beach	1.48 ft	1.5 x 1.22 ft = 1.83 ft	3.3 ft
Cambridge	1.53 ft	1.5 x 1.62 ft = 2.43 ft	4.0 ft
Ocean City	1.63 ft	1.5 x 2.10 ft = 3.15 ft	4.8 ft

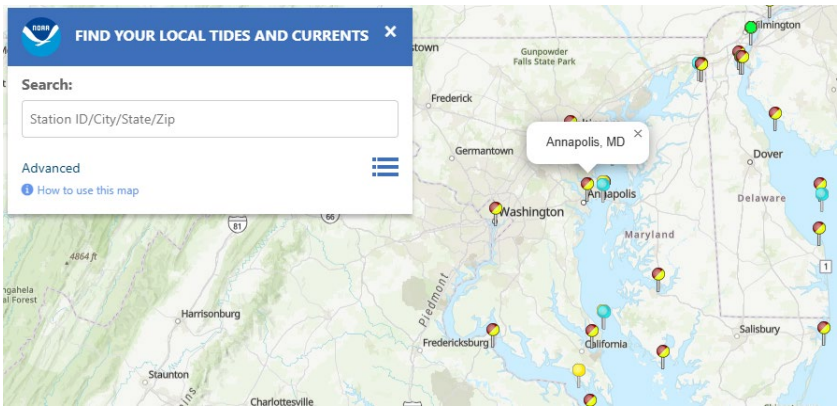
Baseline Elevation: Current Conditions (2025)
All Elevations Referenced to MLW = 0.0 ft using Current conditions (NOAA data from 2025)

NOAA Tide Station	2050 Predicted Elevation	1.5 x Mean Tidal Range (ft)	Upper Limit of Tidal Wetlands in 2050
Baltimore	0.99 ft	1.5 x 1.15 ft = 1.73 ft	2.7 ft
Annapolis	1.02 ft	1.5 x 1.00 ft = 1.50 ft	2.5 ft
Solomons	1.07 ft	1.5 x 1.17 ft = 1.76 ft	2.8 ft
Tolchester Beach	1.02 ft	1.5 x 1.22 ft = 1.83 ft	2.9 ft
Cambridge	1.06 ft	1.5 x 1.62 ft = 2.43 ft	3.5 ft
Ocean City	0.95 ft	1.5 x 2.10 ft = 3.15 ft	4.1 ft

Guide to Determining the Upper Limit of Tidal Wetlands (2050) for Your Project

1. Find your closest NOAA Tide Station: Use the NOAA Tides & Current website to find the tide station nearest to your project. If your project is not located near one of the six stations listed in the tables on page 7, you should contact MDE for assistance.

   Ex: My project is located in Crownsville, MD on the Severn River. The nearest NOAA tide station is located in Annapolis, which is one of the six NOAA tide stations with a predicted elevation in 2050.



2. **Set your baseline elevation (MLW = 0.0 feet):** Decide what your Mean Low Water (MLW) at 0.0 feet will be based on: the nearest NOAA tide station epoch or current conditions. If you are using a baseline elevation that is not based on the NOAA tide station epoch or current conditions, contact MDE staff for assistance.

   Ex: The NOAA Tidal Datum (Epoch 1983 - 2001) is out of date, so I chose to use current conditions to set my baseline elevation (Mean Low Water (MLW) at 0.0 ft).

3. **Choose the correct table to use on page 7:** Look at the tables on page 7 to find the Upper Limit of Tidal Wetlands in 2050. Select the table that matches the baseline elevation you chose in Step 2.

   - Use the first table if your baseline is the NOAA Tide Station Epoch (1983-2001).
   - Use the second table if your baseline is based on Current Conditions (2025).

   Ex: Because I used Current Conditions for my baseline elevation in Step 2, I should use the second table ("Current Conditions (2025)"). For my project, I should not use the "NOAA Tidal Datum" table.

Baseline Elevation: Current Conditions (2025)

All Elevations Referenced to MLW = 0.0 ft using **Current conditions (NOAA data from 2025)**			
NOAA Tide Station	**2050 Predicted Elevation**	**1.5 x Mean Tidal Range (ft)**	**Upper Limit of Tidal Wetlands in 2050**
Baltimore	0.99 ft	1.5 x 1.15 ft = 1.73 ft	2.7 ft
Annapolis	1.02 ft	1.5 x 1.00 ft = 1.50 ft	2.5 ft
Solomons	1.07 ft	1.5 x 1.17 ft = 1.76 ft	2.8 ft
Tolchester Beach	1.02 ft	1.5 x 1.22 ft = 1.83 ft	2.9 ft
Cambridge	1.06 ft	1.5 x 1.62 ft = 2.43 ft	3.5 ft
Ocean City	0.95 ft	1.5 x 2.10 ft = 3.15 ft	4.1 ft

4. Locate your tide station on the chosen table: Find the row for the tide station closest to your project location (the station you found in Step 1).

   Ex: My project is located near the Annapolis tide station, so I should use the row labeled “Annapolis”.

Baseline Elevation: Current Conditions (2025)

All Elevations Referenced to MLW = 0.0 ft using **Current conditions (NOAA data from 2025)**			
NOAA Tide Station	**2050 Predicted Elevation**	**1.5 x Mean Tidal Range (ft)**	**Upper Limit of Tidal Wetlands in 2050**
Baltimore	0.99 ft	1.5 x 1.15 ft = 1.73 ft	2.7 ft
Annapolis	1.02 ft	1.5 x 1.00 ft = 1.50 ft	2.5 ft
Solomons	1.07 ft	1.5 x 1.17 ft = 1.76 ft	2.8 ft
Tolchester Beach	1.02 ft	1.5 x 1.22 ft = 1.83 ft	2.9 ft
Cambridge	1.06 ft	1.5 x 1.62 ft = 2.43 ft	3.5 ft
Ocean City	0.95 ft	1.5 x 2.10 ft = 3.15 ft	4.1 ft

5. **Find the 2050 Predicted Elevation:** Look at the column labelled “2050 Predicted Elevations”. This column shows the predicted elevation in 2050, which MDE has adjusted for the baseline you chose in Step 2.

   Ex: My project is located near the Annapolis tide station, so I should use the row labeled “Annapolis”.

Baseline Elevation: Current Conditions (2025)

All Elevations Referenced to MLW = 0.0 ft using **Current conditions (NOAA data from 2025)**			
NOAA Tide Station	**2050 Predicted Elevation**	**1.5 x Mean Tidal Range (ft)**	**Upper Limit of Tidal Wetlands in 2050**
Baltimore	0.99 ft	1.5 x 1.15 ft = 1.73 ft	2.7 ft
Annapolis	1.02 ft	1.5 x 1.00 ft = 1.50 ft	2.5 ft
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Cambridge	1.06 ft	1.5 x 1.62 ft = 2.43 ft	3.5 ft
Ocean City	0.95 ft	1.5 x 2.10 ft = 3.15 ft	4.1 ft

6. **Determine the Upper Limit of Tidal Wetlands**: Look at the column labeled "Upper Limit of Tidal Wetlands in 2050". This number is the highest elevation where you can plant tidal wetland vegetation (measured in feet above your MLW baseline). Any plantings above this elevation must be counted as upland plantings. Upper Limit of Tidal Wetlands is calculated using 1.5 x Mean Tidal Range. This value is added to the 2050 Predicted Elevation.

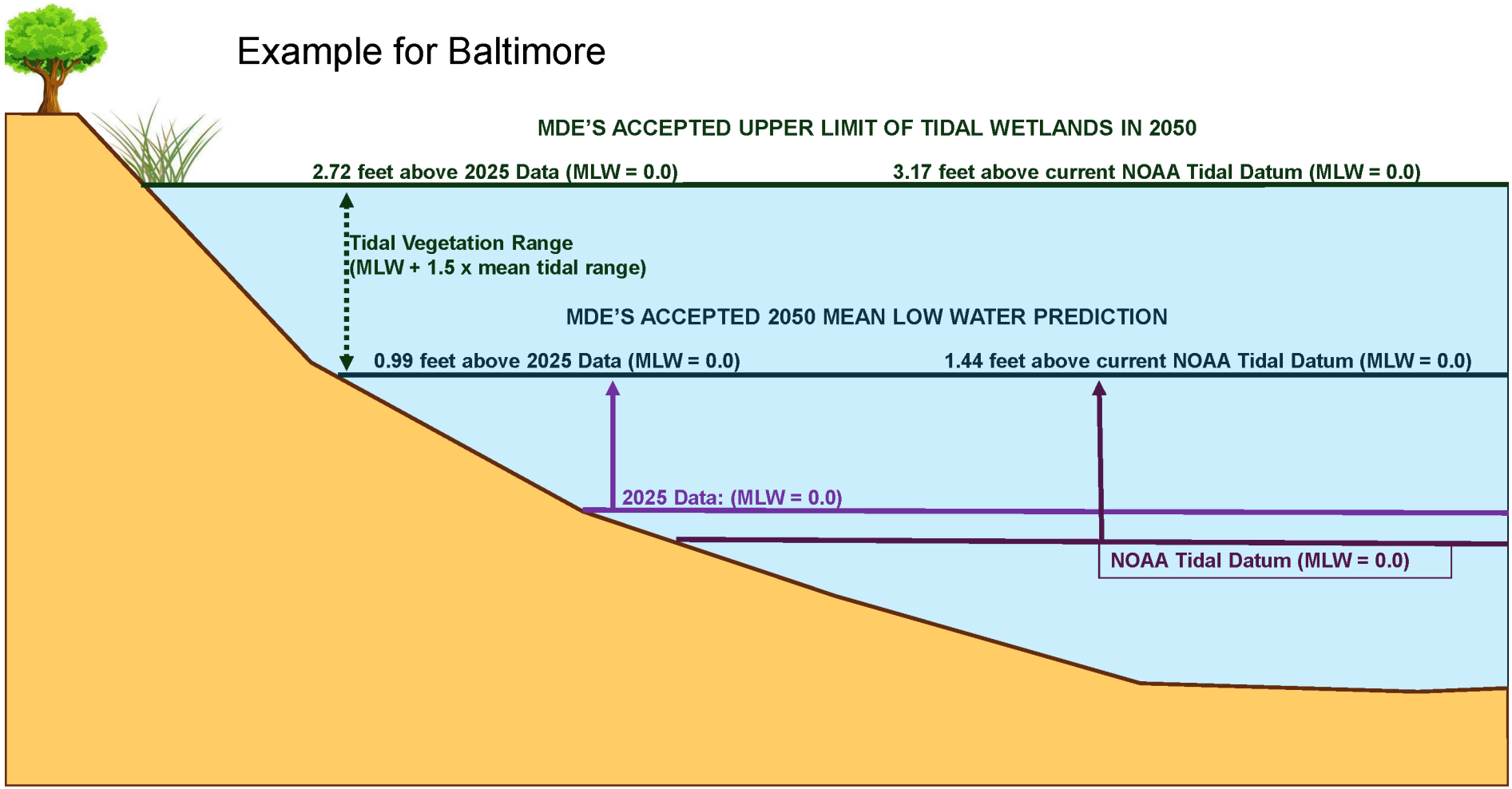
   Ex: For my project, the Upper Limit of Tidal Wetlands in 2050 will be 2.5 feet above MLW. Any wetland vegetation that I proposed to plant up to 2.5 ft above MLW should be included in my planting totals for tidal wetland vegetation. Any plantings above 2.5 ft MLW should be included in my planting totals for upland vegetation.

Baseline Elevation: Current Conditions (2025)

All Elevations Referenced to MLW = 0.0 ft using **Current conditions (NOAA data from 2025)**			
NOAA Tide Station	**2050 Predicted Elevation**	**1.5 x Mean Tidal Range (ft)**	**Upper Limit of Tidal Wetlands in 2050**
Baltimore	0.99 ft	1.5 x 1.15 ft = 1.73 ft	2.7 ft
Annapolis	1.02 ft	1.5 x 1.00 ft = 1.50 ft	2.5 ft
Solomons	1.07 ft	1.5 x 1.17 ft = 1.76 ft	2.8 ft
Tolchester Beach	1.02 ft	1.5 x 1.22 ft = 1.83 ft	2.9 ft
Cambridge	1.06 ft	1.5 x 1.62 ft = 2.43 ft	3.5 ft
Ocean City	0.95 ft	1.5 x 2.10 ft = 3.15 ft	4.1 ft

Sample Illustration for Determining Upper Limit of Tidal Wetlands in 2050

Sample Illustration depicting how to determine the Upper Limit of Tidal Wetlands in 2050 using various MLW benchmarks in Baltimore City. For example, if you are designing a project in Baltimore and are using Current Conditions (2025) as your baseline elevation (MLW = 0.0 ft), then the accepted Upper Limit of Tidal Wetlands will be 2.72 ft above MLW.



COARSE WOODY DEBRIS

Checklist outlines supplemental information that may be required for **a proposed living shoreline that incorporates coarse woody debris (CWD) into the design.** Application is required for any CWD placed or relocated on the project site. Application is not required for existing CWD remaining in the same location as where it fell. Additional information may be required based on the project and/or the applicant's project site but not required for all applications (see Additional Information That May Be Requested).

GENERAL REQUIREMENTS

- Provide detailed information about the purpose and need for the use of CWD in the proposed project design.
- Describe the energy level of the shoreline and explain why the CWD will not become a navigation hazard. Energy level of the shoreline is applicant-defined, and supporting documents and information with sources for the description should be provided. Note: CWD may not be appropriate at high-energy shorelines as a foundational design element. Additional justification for the use of CWD in high-energy shorelines may be required.
    - Example Source: The Coastal Resiliency Assessment layer found in the Maryland Coastal Atlas mapping tool presents wave hazard scoring that may reflect energy conditions at your site. (MD DNR - The Coastal Atlas).
        - Wave Hazard scoring can be found in the Shoreline Hazard Index sublayer under the Coastal Resiliency Assessment layer. When this layer is shown on the map, click on the point and a table displays information on the wave hazard at the site.
- The Department prefers the use of hardwood for CWD features. Provide a description of the type of wood (i.e., soft or hard wood) that will be used as CWD. If using soft wood, provide justification for the use of soft wood instead of hard wood.

PROPOSED CONDITIONS PLAN SHEET(S)

- All CWD requires an anchoring system. Plan view should depict the placement of any CWD, the anchoring system, the approximate size of the CWD, and the channelward extent of the CWD and anchoring system. Plan detail may be provided to accurately depict the system.

CROSS-SECTION(S)

- Cross-section views should include the Mean High Water (MHW), the Mean Low Water (MLW; referenced to 0.0 ft), the proposed CWD, and the proposed anchoring system.

BENEFICIAL USE OF DREDGED MATERIAL

Checklist outlines supplemental information that may be requested for **a proposed living shoreline that utilizes beneficially used dredged material.** Additional information may be required based on the project and/or the applicant's project site but not required for all applications (see Additional Information That May Be Requested).

GENERAL REQUIREMENTS

- Please investigate whether suitable dredged material can be used for the construction of the living shoreline in accordance with the Department's guidance on Innovative Reuse and Beneficial Use of Dredged Material.
    - Additional information regarding opportunities for incorporating dredged material can be found here:
        - MD DNR - The Coastal Atlas
        - MD DNR - Beneficial Use of Dredged Material

- The application for dredging will be required to provide additional information, including:
    - Grain Size Analysis using ASTM D-422 or the most recent methodology (authorization required from the State for sediment bores).
        - If there is reason to believe that contamination exists at the dredge site, then additional sampling may be necessary.
    - Acceptance letter from the property owner of the living shoreline stating the volume of material that they will accept.
    - Other information required by the Department.

- The application for dredging or the living shoreline will be required to provide additional information, including:
    - Information regarding placement of material (e.g., directly on living shoreline below MHWL or material dewatered in the uplands).
    - Information regarding material containment during placement and grading (e.g., construction or placement of sill, turbidity curtain, sill fence, etc.).
    - Other information required by the Department.

- DNR's BUILD tool allows project planners to proactively identify sources of dredged material and potential placement sites.

IMPACTS TO NONTIDAL WETLANDS

Checklist outlines required information for **a proposed living shoreline that affects nontidal wetlands.** Additional information may be required based on the project and/or the applicant's project site but not required for all applications (see Additional Information That May Be Requested).

GENERAL REQUIREMENTS

- If the project includes impacts to wetland vegetation above the mean higher high water line (MHHWL) under current conditions (e.g. NOAA tide data from 2025), then this vegetation is considered nontidal wetland vegetation and requires separate review by the Department's Nontidal Wetlands Division.
    - Coordination with the Nontidal Wetlands Division should occur prior to submission of the application to the Wetland and Waterway Protection Program.
        - Nontidal Wetlands Division Contact List

EXISTING AND PROPOSED CONDITIONS PLAN SHEET(S)

- Plan sheets should include the MHHWL (MLW referenced to 0.0 ft).
    - Additional information can be found here: Mean Higher High Water Determination

TOTAL MAXIMUM DAILY LOAD (TMDL) PROJECTS

Checklist outlines required information for **a proposed living shoreline, which will be utilized for Chesapeake Bay TMDL goals or to achieve Municipal Separate Storm Sewer System (MS4) targets.** Additional information may be required based on the project and/or the applicant's project site but not required for all applications (see Additional Information That May Be Requested).

ADDITIONAL INFORMATION THAT MAY BE REQUESTED

- Provide documentation verifying that the project is an MS4/Chesapeake Bay TMDL-related restoration project, which may include:
  - Watershed Implementation Plan
  - Comprehensive Watershed Assessment
  - Design Report
- What sediment and/or nutrient reduction credits will be received?
- Justify the dimensions of the proposed project. The proposed project should be sited and designed in accordance with applicable recommendations for living shorelines as a Best Management Practice (BMP).
  - Chesapeake Bay Program - Quick Reference Guide for BMPs (Shoreline Management)